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DISEASES CAUSED BY BACTERIA AND FUNGI

HUNTER, M. E., MUDD, S., & WOODBURN, M. A. (1950.) **The morphological characteristics of paired sulfonamide-susceptible and sulfonamide-resistant strains of *Staphylococcus aureus*.—*J. Bact.* 60.** 315-320. [Authors' summary copied *verbatim*.] 909

Three sulfathiazole-resistant strains of *Staphylococcus aureus* are appreciably larger and more pleomorphic than their sulfathiazole-susceptible parent strains. The resistant strains are slightly more readily hydrolyzed by HCl and their nuclei are slightly more readily stainable after hydrolysis. No difference in nuclear structure had been detected.

The nuclei in ribonuclease-cleared cells appear to occupy more of the cell volume than the nuclei of HCl-treated cells.

MURNANE, D. (1949.) **Results of tests of new penicillin preparations, and of treatment of staphylococcal infections of the bovine udder with penicillin, sulphone, and sulphone plus penicillin.—*Aust. vet. J.* 25.** 85-94. 910

The penicillin preparations tested were penicillin in oil, penicillin in oil containing beeswax, penicillin "mastics" [bougies] and procaine penicillin. None of these preparations caused any significant disturbance in the normal udder, judged by change in the character of the secretion, by the effect on yield and by the effect on the leucocyte count.

Penicillin in oil and "mastics" produced concentrations in the udder similar to those produced by aqueous solutions. There appeared to be no significant difference between similar sized doses of calcium penicillin (725 units per mg.) and crystalline G (1,550 units per mg.) in the levels reached in the udder. The addition of up to 6% beeswax to penicillin suspensions did not appear to prolong the levels in the milk to any appreciable extent. Procaine penicillin in oil plus 4% beeswax produced higher udder levels over a period of 24 hours than did suspensions of calcium penicillin.

In the treatment of staphylococcal mastitis, a mixture of sulphone and penicillin was found to be slightly more efficient in eliminating infection than either substance alone. The cures effected in 19 quarters were three with penicillin, none with sulphone and five with the mixture.

—N. WICKHAM.

STABLEFORTH, A. W. (1950.) Die Mastitiden der Rinder mit besonderer Berücksichtigung der Bekämpfung des Str. agalactiae. [**Bovine mastitis and control of *Str. agalactiae*.**]—*Dtsch. tierärztl. Wschr.* 57. 253-258. 911

A review of the methods for the control of infection of cows with *Str. agalactiae*. S. concludes that penicillin is the most effective agent. Organisms other than *Str. agalactiae* tend to re-appear when penicillin treatment is stopped.

—A. MAYR-HARTING.

CROSSMAN, J. V., DODD, F. H., LEE, J. M., & NEAVE, F. K. (1950.) **The effect of bacterial infection on the milk yield of the individual quarters of the cow's udder.—*J. Dairy Res.* 17.** 128-158. [Authors' summary copied *verbatim*.] 912

A study has been made of the effect of udder infections on the proportionate yield and composition of the milk of individual quarters of over 100 cows, and the data from eleven of these cows have been presented.

Typical examples have been given showing that subclinical *Streptococcus* and haemolytic *Staphylococcus* infections may persist for months and either cause a gradual reduction in the proportionate yield and solids-not-fat percentage of a quarter or have no measurable effect, and that both types of reaction may occur simultaneously in the same udder.

Examples also show that following penicillin treatment of clinical cases caused by streptococci and staphylococci there is little recovery in the proportionate yield of the treated quarter until the following lactation, when recovery may be complete.

SPENCER, G. R., & ANGEVINE, D. M. (1950.) **Pathogenesis of bovine mastitis. III. The significance of hypersensitivity in streptococcic infection.**—*Amer. J. vet. Res.* **11.** 317-323. [Authors' summary copied *verbatim.*] **913**

Cows infected with *Streptococcus agalactiae* responded to intradermal injection of a streptococcic antigen with larger and more persistent swellings than did normal animals. The intradermal reaction was greater in infected animals with clinical evidence of mastitis than in those without such clinical manifestations. Two previously infected animals showed a more severe inflammatory response to the intramammary injection of streptococcic antigens than did one normal animal.

Rabbits repeatedly injected intravenously or intracutaneously with *Str. agalactiae* showed an exaggerated inflammatory response when compared to controls following subsequent intramammary injection of the antigen. The studies on cattle also indicated that hypersensitivity of the bovine mammary gland is probably a factor in the pathogenesis of streptococcic mastitis.

WARD, A. H. (1950.) **Field survey of mastitis response to penicillin.**—*Aust. vet. J.* **26.** 283-289. Discussion pp. 289-291. **914**

The practical results following the use of penicillin are recorded for herds with histories of clinical mastitis for the previous season or seasons. It is concluded that treatment with penicillin reduces to a considerable extent the loss in production usually associated with an attack of clinical mastitis. Quarters which have been affected appear to be about twice as liable to re-infection in the following season. It was not clear whether treatment with penicillin of affected quarters at drying off was beneficial. Clinically affected quarters treated with penicillin recover much more rapidly than untreated quarters.—D. F. STEWART.

MURRAY, R. G. E., & LOEB, L. J. (1950.) **Antibiotics produced by micrococci and streptococci that show selective inhibition within the genus streptococcus.**—*Canad. J. Res.* Sect. E. **28.** 177-185. [Authors' abst. slightly modified.] **915**

Two strains of *Micrococcus epidermidis* and five of *Micrococcus pyogenes* were found to produce antibiotics that were detected by using a mucoid *Streptococcus pyogenes* as test organism. The antibiotics were also active against some other Gram-positive organisms, but not against Gram-negative bacteria. The *M. epidermidis* strains inhibited most β-haemolytic streptococci with the exception of mucoid Lancefield Group C. The *M. pyogenes* strains were active against the majority of mucoid *Str. pyogenes* (Group A) but few or none of the nonmucoid strains were inhibited. Streptococci of Groups B, C, and G were not affected. On the basis of antibacterial spectrum and characteristics of the antibiotics (dialysis, stability, and production curves) the seven strains were divided into four groups producing antibiotics of different types.

Three strains of β-haemolytic streptococci were tested which were known to produce antibiotics. Two of these showed a selective inhibition similar to the micrococci. They inhibited all of the mucoid *Str. pyogenes* but few of the nonmucoid; they inhibited all strains of Group C, both mucoid and nonmucoid, but did not inhibit the Group G strains tested.

These observations suggest that, apart from capsulation, there may be a fundamental metabolic difference between the majority of mucoid and nonmucoid strains of *Str. pyogenes*.

SHECHMEISTER, I. L., & GOLDBERG, L. J. (1950.) **Studies on the experimental epidemiology of respiratory infections. II. Observations on the behavior of aerosols of *Streptococcus zooepidemicus*.**—*J. infect. Dis.* **87.** 117-127. [Authors' summary copied *verbatim.*] **916**

Certain aspects of the behavior of aerosols of *Streptococcus zooepidemicus* were investigated prior to its use as an indicator organism in experimental epidemiology of air-borne infections. Atomization of suspensions of the agent resulted in reduction of chains from $3{\cdot}5 \pm 0{\cdot}26$ to $1{\cdot}8 \pm 0{\cdot}17$ cells, and correspondingly, in an increase of about 90% in the viable and total counts of the suspensions. Using Goldberg's particle size analyzer, the mean diameters of the droplet nuclei from TPI [tryptose phosphate infusion] broth and Sorensen's buffer were 1·2 and 1·0μ, respectively. The change in viable bacterial concentration of the clouds was traced from the nozzle of the atomizer to the exhaust. In the case of the concentrated aerosols, a pronounced drop in viable aerosol was noted with the increase of the sampling distance from the atomizer nozzle. This was not the case with either the dilute aerosols or droplets containing P^{32}.

The viable count of bacterial suspensions decreased 2- to 3-fold after prolonged atomization of 65 to 145 minutes. The necessity of an equilibration period of about 15 minutes was demonstrated. Good replication of bacterial concentration in successive aerosol samples was

indicated. It was shown that the bacterial recovery was a function of the suspending medium, dextrin-ascorbic acid yielding the poorest and TPI and bovine serum the best recovery values. A comparison of LIN_{50} [lethal intranasal instillation] and LRE_{50} [lethal aerosol retained by exposed animals] values showed that the number of organisms in the intranasal unit was smaller than in the aerogenic unit.

These results are discussed in terms of their possible effect upon, or utilization in, the experimental epidemiology of air-borne infections.

CLAWSON, B. J. (1950.) **Experimental endocarditis with fibrinoid degeneration in the heart valves of rats.**—*Arch. Path.* **50.** 68-74. [Authors' summary slightly modified.] 917

Endocarditis with fibrinoid degeneration can be produced experimentally in the rat in a relatively high percentage of cases by intracardiac injections of alpha or beta hemolytic streptococci (*Str. viridans* or *Str. pyogenes*).

Two anatomic types of vegetations, rheumatic-like and bacterial, were observed. The bacterial vegetations had colonies of bacteria in the platelet thrombus on the valve.

The presence of fibrinoid giving a positive Schiff reaction was noted in most of the cases of rheumatic-like and in all of the cases of bacterial endocarditis.

The development of either kind of endocarditis did not appear to depend on streptococcic hypersensitiveness as far as could be determined by an intracutaneous skin test.

The incidence of endocarditis was less in animals with a high concentration of streptococcic antibodies in their serum than in normal animals.

The rat, in which no type of hypersensitiveness can be demonstrated by means of an intracutaneous skin test, was found to be the best animal in which to produce rather commonly an endocarditis resembling human rheumatic endocarditis.

RUIZ SANCHEZ, F., PONCE DE LEON, E., VILLEGAS, P., & MARTIN NOVELO, A., JR. (1949.) La aureomicina en el tratamiento del carbunco. **[The treatment of anthrax with aureomycin.]**—*Medicina, Méx.* **29.** 211-215. [Part of abst. in *Bull. Hyg., Lond.* **24.** 962. (1949), copied *verbatim*. Signed: H. HAROLD SCOTT.] 918

The authors tried aureomycin, first on six laboratory cultures of *B. anthracis*, two from fresh human cases and four from cattle; next, on rabbits infected artificially; and lastly, on two human cases. For the laboratory tests 18-hour broth cultures were used and from these other tubes were sown, together with increasing concentrations of aureomycin from 0·1 to 15μgm. (*gamma*) per cc. The minimum concentration inhibiting growth was 5μgm. per cc. It is thus inferior to penicillin which inhibited in a concentration of 0·02μgm. (0·00002 mgm.) per cc., or streptomycin which inhibited at 0·5μgm. (0·005 mgm.) per cc., but superior to chloromycetin, 0·05 mgm. per cc. For animal tests, rabbits of 500–1,500 gm. were inoculated intraperitoneally with 0·5–1·0 cc. of fresh culture of strains of human origin, and immediately afterwards aureomycin was injected intravenously in doses from 10 to 100 mgm. per kilo body weight, five lots of eight rabbits being given 10, 25, 50, 75 and 100 mgm. respectively, others of similar weight serving as controls. All the controls died, but none of those receiving aureomycin, even those with the smallest dose, 10 mgm. per kilo.

HAILER, E., & HEICKEN, K. (1948.) Untersuchungen zur Bekämpfung des gewerblichen Milzbrandes. III. Mitteilung. Die keimtötende Wirkung von Caporit, Chloramin, Chlorimid und Formaldehyd gegenueber Milzbrandsporen bei 20, 12 und 4°. **[Studies on the control of occupational anthrax. III. The lethal effect of caporit, chloramin, chlorimid and formaldehyde on anthrax spores at 20, 12 and 4°C.]**—*Z. Hyg. InfektKr.* **128.** 87-108. [Abst. in *Bull. Hyg., Lond.* **24.** 907. (1949), copied *verbatim*. Signed: R. LOVELL.] 919

The lethal effect on anthrax spores of Caporit, Chloramin, Chlorimid, as well as aqueous and soapy solutions of formaldehyde were tested at 20°, 12° and 4°C. by means of the Paul and Kronig garnet method. The temperatures selected corresponded to the seasonal variations in temperature.

When adjusted to their comparative active chlorine content, Chloramin and Chlorimid were inferior to Caporit especially at 12° and 4°C.; the effects of all were somewhat diminished at these temperatures. The lethal effect, on vegetative bacilli, of Caporit and hypochlorite solutions were about equally effective and appeared to be independent of their active chlorine content.

The lethal effect of formaldehyde solutions on anthrax spores increased up to a concentration of 4 per cent. and was proportional to the increase in percentage. The effect was less at 12°C. than at 20°C., and still less at 4°C.

Soapy solutions were more effective than aqueous solutions, especially at the lower temperatures. Both aqueous and soapy solutions were more effective when prepared 24 hours before use than when freshly prepared.

In order to estimate the practical value of the results obtained, Caporit, Chloramin and the aqueous and soapy solutions of formaldehyde were allowed to act on pieces of pine wood which had been infected with anthrax spores. Under these conditions, the best results were obtained with Caporit and the formaldehyde solutions. On the basis of these experiments proposals were made for the disinfection of transport vehicles, protective clothing of workmen and any other material which had been exposed to infection with anthrax.

HAILER, E., & HEICKEN, K. (1948.) Untersuchungen zur Bekämpfung des gewerblichen Milzbrandes. IV. Mitteilung. Weitere Versuche zur Sanierung der tierhaar- und borstenverarbeitenden Industrie. Die keimtötende Wirkung von wässrigen und seifenhaltigen Formaldehydlösungen bei höheren Temperaturen. [**Studies on the control of occupational anthrax. IV. Experiments on the disinfection of animal hair and bristles. The lethal effects of aqueous and soapy solutions of formaldehyde at higher temperatures.**]—*Z. Hyg. InfektKr.* **128.** 109-124. [Abst. in *Bull. Hyg., Lond.* **24.** 907. (1949), copied *verbatim* Signed: R. LOVELL.] **920**

The lethal effect of aqueous and soapy solutions of formaldehyde was tested on spores of a number of strains of anthrax bacilli at temperatures varying from 30° to 80°C. On the basis of the results obtained, a method was elaborated of disinfection of imported animal hair and bristles of horses, cattle, goat and pig origin. Such hair and bristles are easily damaged by boiling and by steam and the methods previously used diminished the value of the products. It was shown that after six hours' treatment with 0·25 per cent. formaldehyde solutions at 60°C. the hair and bristles retained their colour and texture and the method may be employed in factories concerned with the manufacture of different kinds of brushes. The ideal procedure would be to arrange for disinfection of the raw products at the port, thereby diminishing the spread of infection.

ROBIN, A. H. (1950.) **Avian tuberculosis.**—*Aust. vet. J.* **26.** 274-278. **921**

The known incidence and distribution of TB. in fowls in South Australia is described. The majority of outbreaks have been distributed throughout the more densely settled areas within a 50 mile radius of Adelaide. All outbreaks have been in farm flocks and large commercial farms appear to be free from the disease. The results of testing poultry with avian type tuberculin are tabulated and the conclusion is drawn that the test is not efficient enough to aid in the eradication of the disease. Cases are cited which indicate that contact of cattle with infected poultry can result in the cattle acquiring a sensitivity to synthetic bovine type tuberculin. Two outbreaks of avian type TB. in pigs are described.—D. F. STEWART.

EDGAR, G. 1950.) **The incidence of avian tuberculosis in New South Wales.**—*Aust. vet. J.* **26.** 278-281. Discussion pp. 281-282. **922**

TB. was first diagnosed in poultry in New South Wales in 1944. The disease has now been diagnosed in twenty-one flocks of fowls and three flocks of turkeys. The highest incidence of infection is in the Riverina District with isolated outbreaks on the north and south coasts. The three outbreaks in turkeys have occurred in widely separated areas. The infected farms are all outside the main centres of the poultry industry.—D. F. STEWART.

KEARNEY, W., FARRELLY, B. T., & CRONIN, M. T. I. (1949.) **An investigation into the varieties of *Mycobacterium tuberculosis* concerned in human pulmonary tuberculosis in Ireland.**—*Irish J. med. Sci.* 223-226. [Abst. in *Bull. Hyg., Lond.* **24.** 902. (1949), copied *verbatim.* Signed: B. MOORE.] **923**

Between October, 1945, and July, 1947, 540 specimens (533 sputa and 7 pleural fluids) from cases of pulmonary tuberculosis in all counties of Eire were cultured for tubercle bacilli, and strains isolated were typed, with particular reference to the possible incidence of bovine-type infection. A total of 500 strains were investigated by standard cultural methods and rabbit inoculation of dysgonic strains. All were found to be of human type.

The patients from whom strains were isolated comprised 304 males and 196 females, the great majority of whom were undergoing institutional treatment. They included all age-groups and a wide range of clinical types. About one-half were from rural areas and two-thirds of these rural patients were reported as being in frequent contact with cattle. Evidence of contact with tuberculous animals, however, was not available.

ROTHBARD, S., DOONEIEF, A. S., & HITE, K. E. (1950.) **Practical application of a hemagglutination reaction in tuberculosis.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 72-75. [Authors' summary copied *verbatim*.] 924

The sera of 216 normal adults and patients with syphilis or non-tuberculous chest diseases were tested for tuberculous antibodies by the hemagglutination reaction: 203 showed no reactions; 12 had positive reactions in serum dilution of 1:2; and one in dilution of 1:4. The sera of 168 patients with active tuberculosis showed 92% positive reactions in dilutions ranging from 1:8 to 1:512. Sera from 33 apparently cured tuberculous individuals revealed no reactions in 31, and positive reactions in 2 in a serum dilution of 1:2. This hemagglutination reaction is apparently a relatively specific test for active tuberculosis.

HOLT, H. D., MAXTED, W. R., & SCHULTZE, E. (1950.) **Enzyme treatment of sputum for the isolation of tubercle bacilli. A comparison with Jungmann's method.**—*Mon. Bull. Min. Hlth. publ. Hlth. Lab. Serv.* **9.** 208-212. [Authors' summary copied *verbatim*.] 925

The proteolytic enzyme produced by *Streptomyces albus* can be used for the digestion of sputum for cultivation of tubercle bacilli. A series of specimens was examined in parallel by this method and by Jungmann's technique. The results showed the advantage of the enzyme method, particularly with respect to the rapidity with which growth appeared on Löwenstein medium after treatment.

EGGERTH, A. H. (1950.) **Growth of *Mycobacterium tuberculosis* in egg yolk mediums.**—*Proc. Soc. exp. Biol., N.Y.* **73.** 542-545. [Authors' summary copied *verbatim*.] 926

Egg yolk can be used as the basis for several easily prepared liquid and semi-liquid mediums. On such mediums, growth of the tubercle bacillus is rapid and heavy, even from small inocula. By first removing the acetone soluble fats, water clear extracts of egg yolk can be prepared; these will support growth from small inocula.

SAINT-PRIX, L. (1950.) Une réaction de floculation révélatrice de l'activité de la tuberculose-maladie. [**A flocculation reaction indicating the state of activity of tuberculosis.**] —*Ann. Inst. Pasteur.* **78.** 425-428. 927

A flocculation test is described; using blood serum or cerebrospinal fluid which yielded positive reactions in the case of persons with active clinically progressive TB., and negative reaction in the case of patients in whom the disease had been arrested or cured.

—W. R. BETT.

YEGIAN, D., & VANDERLINDE, R. J. (1950.) **The resistance of tubercle bacilli to chemotherapeutic agents. A review of basic biological considerations.** — *Amer. Rev. Tuberc.* **61.** 483-507. 928

A review, with 95 references, which includes discussion on variations in bacterial populations (mutation, adaptation, etc.); the resistance of mycobacteria to streptomycin *in vitro* and *in vivo;* the permanence of streptomycin resistance, reverse mutation and streptomycin dependence, and the possibilities of multiple drug therapy with *p*-aminosalicylic acid, sulphones, streptomycin and neomycin.

—MALCOLM WOODBINE.

HIRT, R., & HURNI, H. (1949.) Die tuberkulostatische Wirkung von p-Aminosalicylsäure-Derivaten und ähnlichen Substanzen. [**The tuberculostatic action of p-aminosalicylic acid derivatives and similar substances.**]—*Helv. chim. Acta.* **32.** 378-393. [Abst. in *Bull Hyg., Lond.* **24.** 705. (1949), copied *verbatim*. Signed: J. ROODHOUSE GLOYNE.] 929

Thirteen out of the sixteen pages of this paper consist of statistical tables and graphic formulae which do not admit of abstraction. The experiments recorded were designed to test the bacteriostatic power of the derivatives of para-aminosalicylic acid and similar substances against *Myco. tuberculosis in vitro*. Cultures of four different strains of the human type of the bacillus on Dubos liquid media were used. To these were added various dilutions of upwards of seventy different derivatives. The mixtures were then incubated for 12 days at 37°C. and inhibition of growth was estimated by nephelometric comparison of turbidity in the culture media. The tests showed that these derivatives were not so effective as the parent substances.

HOGGARTH, E., MARTIN, A. R., STOREY, N. E., & YOUNG, E. H. P. (1949.) **Studies in the chemotherapy of tuberculosis: V. Thiosemicarbazones and related compounds.**—*Brit. J. Pharmacol.* **4.** 248-253. 930

A large number of thiosemicarbazones have been tested against *Mycobact. tuberculosis* in mice, and it was found that only those derived from substituted benzaldehydes and heterocyclic aldehydes are active. A wide range of partial activity is a feature of the series. For instance, the most effective compound, *p*-

ethylsulphonylbenzaldehyde, partially inhibits growth at a concentration of 1 part in 2 million, but some growth still occurs at 1 in 1,000.

—NESTA DEAN.

PARAF, J., & DESBORDES, J. (1948.) Recherche sur les constituants lipidiques du bacille de Koch. Étude biologique de substances synthétiques ayant une activité allergisante, tuberculinique et haptène. [**Research on the lipid constituents of Koch's bacillus. Biological study of synthetic substances having a sensitizing activity similar to tuberculin and haptens.**]—*Rec. Trav. Inst. Nat. Hyg.* **3.** 519-550. [Abst. in *Bull. Hyg., Lond.* **24.** 703. (1949), copied *verbatim*. Signed: A. BRACKEN.] **931**

The remarkably high lipid content of the tubercle bacillus is well known. The constituent acids of various lipids isolated from the bacillus are characterized by possessing a long, branched carbon chain. The authors claim that lipid fractions are more important than polysaccharides or proteins in the pathogenicity of the tubercle bacillus.

The α, α-disubstituted fatty acids, and particularly those containing double bonds, are especially toxic. Fatty acids without a branched chain are inactive. A series of α, α-disubstituted long-chain acids have been produced synthetically and have been found to produce effects in the animal body and in clinical cases which are strikingly similar to those produced by the tubercle bacillus. Hypersensitivity to tuberculin, the Koch phenomenon, even in certain cases deviation of complement by tuberculous serum, are all obtained after injections of preparations of these acids. Unbranched fatty acids induce none of these effects.

In this paper the tubercle bacillus is viewed as a vector for "tuberculous poisoning" by branched-chain fatty acids. They act by direct intoxication, by interference with the host enzyme systems, and by destruction of the living cells. It is not at present clear whether these acids exist in the bacillus or act alone, or whether they form parts of some kind of lipid-protein complex.

DE ASSIS, A., & LEITE-RIBEIRO, V. R. (1948.) Estudos sôbre as variações do pH nas culturas de BCG em meios liquidos e nas vacinas BCG por via oral. [**Studies on the variations of *p*H in cultures of BCG in fluid media and in oral vaccines.**]—*Hosp., Rio de J.* **34.** 165-174. [Abst. in *Bull. Hyg., Lond.* **24.** 702. (1949), copied *verbatim*. Signed: CHARLES WILCOCKS.] **932**

It has been known for some years that in cultures of BCG in Sauton fluid medium the reaction of the medium becomes more acid as time goes on, to a *p*H value of about 6·0 after incubation for 35 days. The authors reinvestigated the subject, partly from the point of view of the oral vaccine, which is a suspension of BCG in dilute Sauton medium. They used, in addition to the Sauton formula, the IVM medium. [These initials are not explained, but the preparation of the medium is described in detail. It comprises 30 gm. of potato starch made into paste with 300 ml. cold water and added to 3 litres of water in which pieces of cut potato have been placed. The mixture is boiled and stirred for 30 min., the pieces of potato are removed and the fluid is autoclaved. To this fluid 90 gm. of peptone and 360 ml. of glycerin are added; it is filtered and 12 gm. citric acid, 3 gm. magnesium sulphate, 3 gm. dipotassium phosphate and 0·3 gm. iron and ammonium citrate are added. Water is added to 6 litres. The final *p*H, measured by potentiometer, is 7·5. The medium is distributed in amounts of 100 ml. in flasks of 300 ml. capacity, and sterilized. The final *p*H is 7·2.]

The authors show that in Sauton medium there was great variation of *p*H in different flasks after cultivation of BCG for 11 days or more, but not nearly so much in the IVM medium. The average values, however, in Sauton were down to 7·0 at 18–21 days, and to 5·6 at 23 days; whereas the average values in IVM were down to 5·0 at 14 days. In the IVM medium the optimum period for harvesting the growth for use as vaccine is the 10th day of cultivation.

The vaccine is usually suspended in Sauton fluid diluted to one-quarter strength with distilled water; change of *p*H may occur in the fluid itself, but is insignificant if the initial *p*H is 7·6. If the vaccine is prepared with BCG grown for 10 days in IVM, and if the initial *p*H is 7·2, it will remain satisfactory at 4°C. for 10 days. Vaccine prepared with 14-day growth, on the other hand, becomes too acid from the third day to be satisfactory for oral immunization purposes.

[The authors do not discuss the question from the point of view of injection of the vaccine.]

SWEDBERG, B. (1949.) Virulens och immuniserande egenskaper hos tuberkelbaciller av olika kliniskt ursprung. [**Virulence and immunizing properties of tubercle bacilli of varying clinical origin.**]—*Nord Med.* **41.** 1060-1063. [English summary.] [Abst. in

Bull. Hyg., Lond. 24. 904. (1949), copied *verbatim*. Signed: D. J. BAUER.] 933

Groups of mice were vaccinated with recently isolated strains of virulent tubercle bacilli and the degree of immunity produced was investigated by subsequent challenge [the experimental procedure is not adequately described]. Bacilli grown on Sauton's medium produced better immunity than those grown in the Dubos medium, and young cultures (5 to 14 days) were more effective than older ones (three months). There was no correlation between the degree of immunity produced and the severity of the human case from which the strain was isolated, nor with the virulence of the strain for experimental animals. Immunity was produced in guinea pigs by the same strains after exposure to a lethal dose of ultraviolet irradiation, but not by the same strains killed by exposure to 25 per cent. urea for six days.

BØE, J. (1949.) Den optimale dose ved BCG-vaksinasjon. [**The optimal dose of BCG.**] —*Nord. Med.* 42. 1255-1257. [English summary.] [Abst. in *Bull. Hyg., Lond.* 24. 953. (1949), copied *verbatim*. Signed: C. LILLINGSTON.] 934

Now that effective methods (freeze-drying) have been devised for keeping the biological properties of BCG constant, it is the *quantitative* aspect of BCG vaccination which requires most attention. In other words, what is the optimal dose of BCG ? Bøe can give no clear-cut answer, but he draws attention to several observations which have recently given useful hints in this direction. There is the case, reported by Bøe himself in 1948, of the doctor who by mistake vaccinated some 70 persons with a dose 400 times greater than he imagined he gave. Very violent local reactions followed, but there were no fatal disasters. This observation shows that the vaccinator operates within very wide "safety margins". Tuberculin allergy and artificial immunity having been found to be more or less parallel, one should aim at achieving marked and lasting tuberculin allergy, and it would be a great pity to play for safety to such an extent that only feeble tuberculin allergy followed BCG vaccination. A dosage suitable for mass vaccinations may be too timid for isolated cases in which a bad family history calls for comparatively heroic measures.

Bøe suspects that the Scandinavian dosage of BCG may at present be too timid, and he suggests that it might possibly be trebled with benefit. A dosage ten times greater than the present dosage might, on the other hand, be too high. The lack of effective standardization of BCG at present hinges on purely technical difficulties. The strength of BCG is at present given in mgm. moist weight per ml. Now "moist weight" is a most elastic conception, and it is possible that there may actually be fewer living organisms per ml. in the Swedish and Norwegian BCG vaccines which contain $\frac{1}{2}$ mgm./ml. than in the Danish BCG vaccine which contains $\frac{1}{4}$ mgm./ml.

JOHNSON, E. P. (1950.) **Histologic changes in skin of cattle due to intradermic johnin reaction.**—*J. Amer. vet. med. Ass.* 117. 106. [Only abst. given. Abst. from abst.] 935

There was cellular infiltration at the site of injection, in which histiocytes predominated. Histologically, the reaction due to intradermal johnin in cattle infected with Johne's disease was similar to that caused by intradermal tuberculin in tuberculous cattle. No difference was observed in the reactions due to natural or artificial sensitization.—ROY MACK.

LARSEN, A. B. (1950.) **Experiment on vaccination against Johne's disease.**—*J. Amer. vet med. Ass.* 117. 106. [Only abst. given. Abst. from abst.] 936

Seven vaccinated heifer calves and three unvaccinated controls were exposed to infection by ingestion of infected fodder. The three controls and three of the vaccinated calves died from clinical Johne's disease. Results of repeated intradermal tuberculin and intradermal johnin tests are given.—ROY MACK.

MULLANEY, P. E. (1950.) **Udder infusion with aureomycin hydrochloride in *Corynebacterium pyogenes* infection.**—*Irish Vet. J.* 4. 98. 937

The treatment is described of a case of *C. pyogenes* infection with infusions of 'one tube' of aureomycin repeated twice at 48-hour intervals, resulting in recovery.—NESTA DEAN.

MCDOWELL, F., & VARNEY, P. L. (1947.) **Melioidosis. Report of first case from the Western Hemisphere.**—*J. Amer. med. Ass.* 134. 361-362. [Authors' summary slightly modified.] 938

The first case of melioidosis in man occurring in the Western Hemisphere is reported. It was the chronic form, consisting of ulcers and sinuses about the buttock and thigh, but may have been preceded by an acute pneumonic phase. General therapy with sulfonamide drugs, penicillin and streptomycin was ineffectual. Local treatment with a wide variety of agents was of little benefit. Widespread cautery ex-

cision followed later by skin grafting, seemed to be the most helpful form of treatment.

ROWLANDS, W. T., & EDWARDS, C. M. (1950.) **Investigation of further cases of polyarthritis in lambs following serum inoculation.**—*Vet. Rec.* **62.** 213. 939

Lamb dysentery serum and pulpy kidney serum left over from the previous lambing season caused polyarthritis due to *Erysipelothrix rhusiopathiae* when injected into lambs. This is considered to be due to an initial slight contamination which had become greater as a result of multiplication of the organisms in the serum during storage. Serum which was known to have been contaminated originally, but which had since been refiltered, was examined in July, 1948, found to be sterile, and stored in a refrigerator; after incubation at 37°C. for 48 hours in the spring of 1949, it was found to be heavily contaminated with *E. rhusiopathiae*.

The authors conclude that, since "natural and spontaneous infection with *E. rhusiopathiae*" can occur in horses, sterility tests of sera should include an animal inoculation test after preliminary incubation of the serum concerned. Also, since phenol in the accepted concentration did not prevent multiplication of organisms, it is suggested that a more efficient preservative be sought.—G. B. S. HEATH.

FORTNER, J. (1949.) Über konstitutionell und erblich bedingte Resistenz gegen den Schweinerotlauf. [**Constitutional and hereditary resistance against swine erysipelas.**]—*Berl. Münch. tierärtzl. Wschr.* No. 4. pp. 37-39. 940

Pigs were infected percutaneously with up to eight strains simultaneously of *Erysipelothrix rhusiopathiae*. The reactions varied markedly from site to site on the same animal. Considerable variations were noted also in the reactions of individual pigs to scarification with the same strain of *E. rhusiopathiae*.

The percentage of positive infections in animals tested when newly purchased during 1943-45 was much higher than that in animals bred at the Robert Koch Institute from survivors of these earlier experiments and tested during 1946-48. Some field data are mentioned to support the thesis that strains of pigs resistant to swine erysipelas can be bred and could be of commercial value. The wild pig is apparently resistant to swine erysipelas.

—ALASTAIR N. WORDEN.

EVELETH, D. F., BOLIN, F. M., GOLDSBY, A. I., & HOLM, G. C. (1949.) **Erysipelas of swine, sheep, turkeys.**—*Rep. N. Dak. agric. Exp. Sta.* No. 356. p. 56. 941

A note of a few lines discussing in conventional terms the economic importance of *Erysipelothrix rhusiopathiae* infection. Reference is made to the treatment of infected turkeys by implanting pellets of streptomycin and penicillin under the skin or intramuscularly.

—D. LUKE.

CARTER, G. R. (1950.) **Studies on a *Pasteurella multocida* chicken embryo vaccine. I. The comparative immunizing value of broth bacterins and a chicken embryo vaccine in mice.**—*Amer. J. vet. Res.* **11.** 252-255. [Author's summary modified.] 942

The preparation of a *Pasteurella septica* chick embryo vaccine is described. It protected mice against more than 1,700 lethal doses (l.d.) of *Past. septica*. The most immunogenic broth bacterin conferred protection not in excess of six l.d. of the same challenge culture. The differences in the immunogenicity of four broth bacterins prepared from *Past. septica* were considered to be of little significance.

ROZANSKY, R., WEBER, D., & GUREVITCH, J. (1950.) **Production of hydrogen sulfide by *Pseudomonas aeruginosa*.**—*Amer. J. clin. Path.* **20.** 1090-1091. [Authors' summary slightly modified.] 943

Twenty strains of *Pseudomonas pyocyanea* from different clinical sources were studied and found to produce hydrogen sulfide. Hydrogen sulfide is formed by *Ps. pyocyanea* on slants of Kligler's iron agar during the first 24 hours. The differential diagnosis between *Ps. pyocyanea* and other gram-negative bacilli on the basis of H_2S production is discussed.

ECKELL, O. A., CRLIACQ, C., & GARAGARZ, J. (1949.) La poliartritis de los potrillos por *Shigella viscosa*. Su tratamiento por la sulfoguanidina y el salicilato de sodio glucosado inyectable. [**Joint-ill in foals caused by *Bact. viscosum equi* and its treatment with sulphaguanidine and sodium salicylate.**]—*Rev. Med. vet. B. Aires.* **31.** 3-14. 944

In ten foals treatment with seven doses of 1g. sodium salicylate, in 10% glucose solution, gave clinical cure in six days. Sulphaguanidine in doses of 0·05 to 0·1 g. per kg., divided into six per day, caused cessation of diarrhoea and in general improvement. Out of 14 cases ten were treated simultaneously with salicylate and sulphaguanidine and only one died; the remaining four treated symptomatically all died.

—MALCOLM WOODBINE.

BISHOP, W. H. (1950.) **Salmonellosis in cattle.**—*Aust. vet. J.* **26.** 253-255. **945**

An outbreak of *S. typhi-murium* infection in a herd of cattle is described. Six cows and three calves were affected. The epidemiology of the outbreak is discussed and it was thought that the proximity of a rat colony, in which *S. typhi-murium* was demonstrated in two of eight trapped rats, might have been the origin of the infection. The symptoms, P.M. appearances and treatment are described. It was considered that the intravenous injection of glucose-saline was at least as important as chemotherapy.

—D. F. STEWART.

JEBSON, J. L. (1950.) **Salmonellosis in sheep.**—*Aust. vet. J.* **26.** 256-258. **946**

During a year, 21 separate outbreaks of infection of sheep by *S. typhi-murium* were encountered. The outbreaks were widely scattered throughout N.Z. and occurred on farms differing in type and in rate of stocking. A description is given of the usual symptoms and P.M. appearances, but outbreaks varied somewhat in character. In general there was no evidence of concurrent infection in other livestock grazing the same pastures.

—D. F. STEWART.

JOSLAND, S. W. (1950.) **Salmonella infections of animals in New Zealand.**—*Aust vet. J.* **26.** 249-253. **947**

During the past three years only two types of *Salmonella* have been isolated from domestic animals in N.Z. *S. cholerae-suis* has been isolated only from pigs whereas *S. typhi-murium* has been isolated from cattle, sheep, horses, pigs, ducks, canaries, pheasants and small laboratory animals. The histories of the infections are given, together with the results of experimental work on their control.

—D. F. STEWART.

MACHADO, A. M., & DE OLVEIRA, J. A. (1947.) Ensaios de identificação serológica de algumas estirpes de salmonelas. [**Classification of salmonella species isolated from animals.**]—*Repos. Lab. Pat. vet., Lisboa.* **6.** 323-336. [English, French and German summaries.] **948**

Some data were given of the species and strains isolated between the years 1913-44. Routine laboratory technique was used in the classification—direct examination, cultural characteristics and biochemical reactions. From 1945 onwards the rapid agglutination test was employed.

Most of the species, *S. cholerae-suis* var. *kunzendorf*, *S. cholerae-suis* and a few strains of *S. typhi-murium*, were isolated from pigs. *S. abortus-equi* was isolated from foetal membranes of mares, *S. enteritidis* from cattle and pigs, *S. typhi-murium* was found in goats and chickens and *S. gallinarum* was isolated from adult fowls.—F. A. ESTEVES.

PIRINGER, W. A., & PIRINGER-KUCHINKA, A. (1950.) Meerschweinchen-Epizootie durch Salmonella typhimurium. [*Salmonella typhimurium* **infection in g. pigs.**]—*Wien tierärztl. Mschr.* **37.** 8-13. **949**

An account of *S. typhi-murium* infection in a stock of g. pigs, 30 of which died within two months. Mice had access to the g. pig boxes and were considered to be the source of infection.—A. MAYR-HARTING.

GORHAM, J. R., & BAKER, G. A. (1950.) **Mucin ineffective in establishing Salmonella infections in mink and foxes.**—*Amer. J. vet. Res.* **11.** 331-333. [Authors' summary copied *verbatim*.] **950**

Salmonella typhimurium organisms suspended in mucin and fed to normal and depleted mink and foxes failed to cause an infection.

WEIDENMÜLLER, H. (1950.) Über eine Bacterium (Salmonella-) pullorum-Infektion bei einer Katze. [*Salmonella pullorum* **infection in a cat.**]—*Berl. Münch. tierärztl. Wschr.* No. 4. pp. 71-72. **951**

Salmonella organisms seem to occur fairly frequently in carnivorous animals, but *S. pullorum* has been found rarely in animals other than birds. W. reported infection with *S. pullorum* in a 3-month-old kitten which died after four days of illness. The source of infection could not be ascertained. Fatal infection with *S. pullorum* was produced in a cat by intravenous injection. Ingestion of the organisms by healthy cats resulted only in a rise in agglutination titre, and the organisms survived in the body for some weeks.—A. MAYR-HARTING.

WRIGHT, M. L., & EDWARDS, P. R. (1948.) **The serologic differentiation of** *Salmonella pullorum* **forms.**—*Amer. J. vet. Res.* **9.** 386-388. **952**

The differentiation of the standard and variant strains is based on the determination of the proportion of antigen XII_2 to XII_3. Comments are made on criteria for assessing the antigenic characters of a culture.—F. W. JORDAN.

CHANG, K., & STAFSETH, H. J. (1950.) **Influence of serum of normal and pullorum-infected birds on the bacteriostatic and bac-**

tericidal action of sulfadiazine on *Salmonella pullorum*.—*Poult. Sci.* 29. 139-145. 953

Sodium sulphadiazine, 1:5,000, inhibited the growth of *Salmonella pullorum* suspensions for 24 hours. The addition of 0·5 ml. of normal rabbit serum did not affect this inhibition, but in the presence of normal fowl serum inhibition for 24 hours was obtained with 1:320,000 solutions of sodium sulphadiazine, and 1:5,000 solutions prevented growth for more than 96 hours. This property of the serum was largely lost by heating at 56°C. for 30 min., but not by storage in a refrigerator for 24 hours.

The serum of artificially infected birds was not bacteriostatic, but could be made so *in vitro* by the addition of sulphadiazine or normal fowl serum in amounts not themselves bacteriostatic.

In infected birds given 0·4 g. per kg. of sodium sulphadiazine for three days, the intravenous injection of 15 ml. of normal serum did not enhance the activity of the sulphonamide.

—Nesta Dean.

Hall, W. J., MacDonald, A. D., & Legenhausen, D. H. (1949.) **Studies on fowl typhoid. II. Control of the disease.**—*Poult. Sci.* 28. 789-801. 954

Observations were made on the value of repeated testing and removal of reactors in controlling the disease. It was found that even when breeding flocks were tested twice before collecting the eggs for hatching, outbreaks occurred on the rearing ranges about the time when pullets began to lay. It is suggested that these outbreaks were due to the consumption by the birds of infected eggs laid by the pullets. On the ranges at the onset of egg production some eggs are laid outside the nesting boxes and inevitably some get broken and are eaten by the pullets.

On the other hand the broiler chicks from these same flocks are reared indoors and marketed at 12–14 weeks. No outbreaks of typhoid were observed in them. This latter circumstance is adduced as additional evidence of the egg origin of the disease among the laying pullets. However, the possibility of an extraneous source of infection is not ruled out.

Immunization trials were carried out with vaccines killed by various chemicals or by heat, with subsequent exposure to *Salmonella gallinarum*. In general the immunity so induced was brief and birds again became susceptible after 3–4 weeks.

Salmonella bacteriophage was found to be ineffective in protecting birds exposed to infection.

Sulphonamide therapy trials indicated that these drugs will suppress mortality only for a very short time after the period of administration of the drug.—D. Luke.

Wilson, J. E. (1950.) **The occurrence of *S. typhi-murium* in hen eggs and its implications.**—*Vet. Rec.* 62. 449-450. [Author's summary copied *verbatim*.] 955

The isolation of *S. typhi-murium* from hens' eggs is recorded. Fumigation, as soon as practicable after eggs are set, is usually an effective method of prevention of the disease in the incubator. Where it fails direct egg transmission is likely and a combined programme of agglutination testing and fumigaton is recommended.

Eedy, B. N. (1950.) **Salmonella food poisoning conveyed by a duck egg and associated with infection in a drake.**—*Mon. Bull. Min. Hlth. publ. Hlth. Lab. Serv.* 9. 213-214. [Author's summary copied *verbatim*.] 956

A case of food poisoning due to the consumption of a duck egg is reported. *Salm. typhi-murium* of Vi-phage Type 4 (Felix and Callow) was isolated from the urine and faeces of the patient and from 8 out of 47 eggs from the responsible flock. Rectal swabs from the 42 birds in the flock were examined but the salmonella was isolated from the drake only. Bacteriological examination of eggs three weeks after elimination of the drake gave negative results.

Manthei, C. A., DeTray, D. E., & Goode, E. R. (1950.) **Brucella infection in bulls and the spread of brucellosis in cattle by artificial insemination. I. Intrauterine injection.**—*J. Amer. vet. med. Ass.* 117. 106. [Only abst. given. Abst. from abst.] 957

A naturally infected bull was used. Its potency was determined by the natural service of three cows, all of which conceived. Of twelve susceptible cattle inseminated by intra-uterine injection, eight developed active brucellosis. Also eight cows, including six of those which developed infection, failed to conceive.

—Roy Mack.

Morales Otero, P. (1949.) **A short note on the epidemiology of brucellosis in Puerto Rico.**—*Puerto Rico J. publ. Hlth.* 24. 349-354. [Spanish version 355-361.] [Abst. in *Bull. Hyg., Lond.* 24. 865. (1949), slightly modified. Signed : R. Lovell.] 958

Contagious abortion in cattle was introduced into Porto Rico in 1923 and spread rapidly: vaccination with a living suspension was adopted to avoid the symptoms of abortion.

Today the disease is widely scattered and is still spreading; as the infection has spread among the cattle so has the brucellosis morbidity in man risen. There is no evidence that the disease might come from the pig or goat population.

In 1930, 58 per cent. of 528 cattle were infected, according to a serological survey, and 0·68 per cent. of 1,750 human sera were shown to contain agglutinins. In 1939, a sample of the population was tested by the agglutination test, the cutaneous test, the complement fixation reaction and the opsonin test. Of 222 dairy workers, 35·5 per cent. reacted to one or more of the tests against 5 per cent. of 1,003 of the general population.

Another survey was made in 1947 and although only 13·6 per cent. of the 9,770 cattle sera tested gave positive agglutination reactions the percentage of positive among 1,855 human sera was 4·7; the percentage of reactors to the agglutination test alone in 1939 among the general population was 0·29. The morbidity rate in man is therefore about 5 times higher than in 1930, and human cases of the disease are being reported.

GOLUBEV, I. E. (1949.) **[Reciprocity between the host organism and extraneous conditions in brucellosis in horses.]**—*Veterinariya, Moscow.* **26.** No. 9. 20-22. **959**

A general account of the disease in horses with notes on observation of 480 cases using agglutination and skin tests.—F. A. A.

CARRILLO CÁRDENAS, C., ORDÓÑEZ, & RUIZ CASTAÑEDA, M. (1949.) **Quantitative blood cultures from brucellosis patients and from animals experimentally infected with brucella organisms.**—*Puerto Rico J. publ. Hlth.* **24.** 293-298. [Spanish version 299-304.] **960**

Details are given of a method whereby the approximate number of the viable *Brucella* in the blood of patients and experimentally infected animals is estimated.

IVANOVA, V. I. (1949.) **[Organization and manning of brucellosis isolation centres.]**—*Veterinariya, Moscow.* **26.** No. 9. pp. 19-20. **961**

A general discussion on control by segregation and disposal of less valuable infected animals. Isolation centres should be established in all districts, suitably sited for access but with no through roads and self-contained as to pasture, water, fodder and, largely, as to personnel. Emphasis is laid on the importance of pasteurizing milk and milk products from diseased cattle before sale, on food hygiene in the dairy and in and around farm buildings.—F. A. A.

MUTH, O. H. (1949.) **Brucellosis control in Oregon.**—*Bol. Ofic. sanit. pan-amer.* **28.** 691-695. [Abst. in *Bull. Hyg., Lond.* **24.** 961. (1949), copied *verbatim.* Signed: R. LOVELL.] **962**

Cattle constitute the chief reservoir of infection with *Brucella* in the State of Oregon, and control efforts have been directed largely towards the elimination of infection in this species. It was thought that abortion-free herds could be built up largely by preventing exposure of females after they had reached sexual maturity. In 1929, 18·77 per cent, of 45,562 cattle blood samples were positive by the agglutination test; in 1934, 7·88 per cent. of 95,586 samples were positive. This has fallen to 1·8 per cent. at the present time.

The basis of the control in operation consists of:—(1) Testing, by the agglutination test, of all female cattle and bulls over six months of age at least once a year. (2) Removal of reactors and retesting until the herd is clean. (3) The owner to select one or other of the following:—(a) test and slaughter of reactors; (b) test and slaughter of reactors and vaccination of calves between the ages of five and eight months. (4) No animals to be added to any herd except from a disease-free herd. (5) Beef cattle not officially tested to be kept from mingling with the tested cattle. (6) Dairy cattle must be tested and proved free before being allowed to run in community pastures.

The inclusion of strain 19 vaccine into the programme in 1940 had little influence on the control among dairy herds; calfhood vaccination has been used to a considerable extent in the case of beef animals under semi-range conditions.

Of the 36 counties in the State, approximately one-half now have an incidence of less than 1 per cent. and it is hoped that the disease will be eliminated within a few years.

WATTS, R. E., BOLEY, L. E., & GREIG, W. A. (1950.) **Sulfamethazine and blood transfusion in experimental treatment of bovine brucellosis.**—*Amer. J. vet. Res.* **11.** 304-307. [Authors' summary copied *verbatim.*] **963**

Four cattle with brucellosis were treated repeatedly with sulfamethazine and transfusions of normal citrated bovine whole blood or normal serum. Three infected cattle were held as untreated controls. Hematologic, serologic, and bacteriologic studies were made before, during, and after treatment. The treatment had no apparent effect on the blood titer and did not

prevent 3 cows from shedding brucella in their milk.

LACY, H., & LANKFORD, C. E. (1949.) **Comparative bacteriostatic effect of aureomycin and streptomycin for *Brucella*.**—*Tex. Rep. Biol. Med.* **7.** 260-269. [Abst. in *Bull. Hyg., Lond.* **24.** 933. (1949), copied *verbatim*. Signed: L. P. GARROD.] **964**

This paper describes an *in vitro* study of the action of aureomycin and streptomycin on *Brucella*: 22 strains of *Br. abortus* were used and 2 each of *Br. suis* and *Br. melitensis*. All were highly sensitive to aureomycin, as judged by tests of capacity to inhibit growth, despite the fact that such tests with a slowly growing organism and an antibiotic which rapidly loses activity in a culture medium are liable to give "spuriously high values of tolerance". Efforts to habituate the organisms to higher concentrations were unsuccessful. The concentrations of streptomycin required to inhibit growth were from 2 to 5 times greater, and highly resistant mutants were readily obtained: some were also dependent, and one, although inhibited by 30 μgm. streptomycin per ml., grew well in much higher concentrations. The combined *in vitro* action of aureomycin and streptomycin, and of aureomycin and sulphadiazine was found to be merely additive.

BRYER, M. S., SCHOENBACH, E. B., WOOD, R. M., & LONG, P. H. (1949.) **The treatment of acute brucellosis with aureomycin.**—*Johns Hopk. Hosp. Bull.* **84.** 444-460. **965**

Five patients with high fever and blood-cultures positive for brucella organisms were treated with aureomycin. All became and remained afebrile and were markedly improved after 48–72 hours. Blood cultures remained sterile, and there were no relapses. Four of the strains isolated were classified as *Brucella suis*, and one as *Brucella abortus*. Preliminary observation in experimental animals and human beings had indicated that the toxicity of aureomycin was relatively low.—W. R. BETT.

BRAUDE, A. I., & SPINK, W. W. (1950.) **The action of aureomycin and other chemotherapeutic agents in experimental brucellosis.**—*J. Immunol.* **65.** 185-199. [Authors' summary copied *verbatim*.] **966**

A method is described for testing the action of drugs against the acute lethal effect of brucella in mice.

Of the agents believed to be therapeutically effective in human brucellosis, aureomycin and a combination of streptomycin and sulfadiazine afforded mice excellent protection against the acute lethal effect of brucella. When chloramphenicol was given in the largest doses possible to administer by injection, there was only slight protection.

Mice were protected against the acute lethal effect of brucella as late as 72 hours and possibly 96 hours after the last dose of aureomycin.

The protective action of aureomycin against the acute lethal effect of brucella may be due to a primary antitoxic property.

Aureomycin inhibited the multiplication of *Brucella abortus* in sublethal infections of mice and *Br. suis* in sublethal infections of guinea pigs. In a small minority of animals infected with *Br. abortus*, there was evidence that the infection was prevented after treatment with aureomycin.

The action of aureomycin in experimental brucellosis has been compared with its action in brucellosis in man.

OLITZKI, L., & OREN, R. (1950.) **Protective effect of cattle sera on white mice infected with *Brucella abortus* with the aid of the mucin technic.**—*Proc. Soc. exp. Biol., N.Y.* **73.** 617-618. [Authors' summary slightly modified.] **967**

Lethal infections of *Br. abortus* may be produced regularly in mice with the aid of the mucin technic by the injection of 0·5 cc. of a 4-fold concentrated 48 hours broth culture. Cattle sera with agglutinin titres for *Br. abortus* of 200 or higher protect the mice against the infection, when at least 0·05 to 0·02 cc. of serum is administered 24 hours prior to infection. The minimal protecting dose and the minimal agglutinating serum quantity per cc. are not closely linked. The serum prevents general septicemia and death, but does not prevent the formation of infectious foci in the abdominal organs.

LUCAS, A., ANDRAL, BOULEY, PARAF, & QUINCHON. (1950.) La tularémie. **[Tularaemia in hares and rabbits in France.]**—*Rec. Méd. vét.* **126.** 519-534. **968**

A general account of tularaemia in rabbits and hares, with details of 32 cases seen in a period of four months. Diagnosis, immunology, and treatment with aureomycin and chloromycetin are discussed.—W. R. BETT.

ALEXANDER, M. M., WRIGHT, G. G., & BALDWIN, A.C. (1950.) **Observations on the agglutination of polysaccharide-treated erythrocytes by tularemia antisera.**—*J. exp. Med.* **91.**

561-566. [Authors' summary copied *verbatim.*] 969

Erythrocytes treated with polysaccharide from *Past. tularensis* are specifically agglutinated by the sera of persons recovered from tularemia or vaccinated against it, and by the sera of animals immunized with living cultures. The serum hemagglutination titer is correlated with the amount of antibody as measured by the quantitative precipitin method with polysaccharide, but not with the bacterial agglutination titer. The meaning of the results is discussed.

DAMON, S. R., & SCRUGGS, J. H. (1950.) **Recovery of *Brucella melitensis* from the hog.**—*Publ. Hlth. Rep., Wash.* **65.** 374. 970

The isolation of *Br. melitensis* from the blood of pigs in Indiana is recorded here for the first time. *Br. melitensis* was recovered from the blood of a farmer with clinical symptoms of brucellosis. Epidemiological investigations revealed that one cow and eight of the sows on the farmer's premises reacted to the blood agglutination test. A culture was subsequently isolated from the blood clot of one of the pigs and this culture was shown by H_2S production and dye inhibition to correspond to *Br. melitensis*.—L. M. JONES.

COLE, L. J., & BRAUN, W. (1950.) **The effect of ionic Mn and Mg on the variation of *Brucella abortus*.**—*J. Bact.* **60.** 283-289. [Authors' summary copied *verbatim.*] 971

In the presence of 0·013 M or more of Na-pyrophosphate the establishment of nonsmooth variants in growing smooth broth cultures of *Brucella abortus* is selectively suppressed. This effect, produced in complex media as well as in a simple synthetic medium, can be antagonized by the simultaneous addition of small amounts of Mn^{++} or Mg^{++}. It was shown that the concentration of ionic Mn^{++} or Mg^{++} is an important environmental determinant of the dissociation index (i.e., the percentage of nonsmooth variants that may establish themselves during 10 days of growth in originally smooth broth cultures). The effect of pyrophosphate may, therefore, be attributable to its ability to remove free Mn^{++} and Mg^{++} from the media by forming metal complexes with these ions. The probable mechanism responsible for the effect of these environmental agents upon population changes has been discussed.

JAMIESON, S. (1948.) **Black disease of sheep. Its nature, importance and prevention.**—*Scot. Agric.* **28.** 155-161. 972

Spores of *Clostridium oedematiens* were found in the liver in 11 out of 38 healthy sheep, and also in that of 3 out of 18 rabbits. Since 41% of cattle on affected farms in Caithness were infested with liver fluke, treatment of cattle as well as sheep is important.

—ROY MACK.

STEYN, D. G. (1950.) **The treatment of botulism (lamsiekte).** [Correspondence.]—*J. S. Afr. vet. med. Ass.* **21.** 81. 973

Carbachol (carbamylcholine chloride) in conjunction with neostigmine (the dimethyl carbamic ester of 3-hydroxyphenyl-dimethylamine), given in small doses at short intervals, gave promising results in the treatment of botulism in mules. Cases were also treated with strychnine and some dairy cows were given picrotoxin (a glucoside obtained from the seed of *Anamiota cocculus*) without apparent beneficial effects. Daily emptying of the large bowel with an oily enema is an important factor in the treatment.—R. MARSHALL.

SAUNDERS, L. Z. (1948.) **Systemic fungous infections in animals: a review.**—*Cornell Vet.* **38.** 213-238. 974

In this useful survey (which concludes with a bibliography of 138 references) much scattered information on the aetiology, geographical distribution, and diagnosis of systemic mycoses of animals is concisely summarized. Epizootic lymphangitis (*Histoplasma farciminosum*) of horses, mules, and donkeys appears exceptional in being confined to animals. It is certain or highly probable that the fungi causing the other major systemic mycoses of animals hitherto recognized are also responsible for mycoses in man, although the relationship of the disease in animals to that in man is usually obscure.

Histoplasmosis (*Histoplasma capsulatum*), which is usually fatal, has most frequently been recorded in animals from North America in dogs. Diarrhoea and emaciation are the usual signs of this disease, while at autopsy enlargement of the spleen, liver, and visceral lymph nodes is commonly seen. Sporotrichosis (*Sporotrichum schencki*) affects horses (in which the subcutaneous nodule formation has sometimes been mistaken for epizootic lymphangitis), dogs, and probably other animals.

Coccidioides immitis, the cause of coccidioidomycosis, a pulmonary disease of man in certain parts of the U.S.A., has been frequently recorded in cattle and occasionally in other farm animals while rodents possibly serve as a reservoir of infection.

Rhinosporidiosis (*Rhinosporidium seeberi*), a chronic affection of the nasal and ocular mucous membranes, occurs in cows in India and Uruguay and in the horse in both these countries and in South Africa.

Other diseases reviewed are North American blastomycosis (*Blastomyces dermatitidis*) and cryptococcosis (or torulosis) (*Cryptococcus neoformans*) of horses and other animals, moniliasis (*Candida albicans*) and aspergillosis (*Aspergillus fumigatus* and other species) of birds and, less frequently, mammals while a number of other cases in which fungi were found causing, or associated with, minor disorders are noted.—G. C. AINSWORTH.

LOONEY, J. M., & STEIN, T. (1950.) **Coccidioidomycosis. The hazard involved in diagnostic procedures, with report of a case.**—*New Engl. J. Med.* 242. 77-82. 975

Coccidioidomycosis is a serious hazard for workers in hospital laboratories who handle pathogenic material and who may be unfamiliar with the disease. A review of the literature shows eight cases of accidental infection, with clinical manifestations, caused by handling *Coccidioides immitis* cultures, one being fatal; also 25 cases of infection as revealed by positive coccidioidin skin tests. The authors add three cases among their technicians, who gave a positive reaction, and report a case of disseminated infection contracted in the laboratory.

Penicillin, aureomycin, promizole, and chloromycetin in large doses have been ineffective.—W. R. BETT.

VORONOV, D. L. (1949.) [**Seasonal spread and modes of infection in epizootic lymphangitis.**]—*Veterinariya, Moscow.* 26. No. 9. pp. 23-25. 976

The author states that biting flies are the vectors responsible for spreading epizootic lymphangitis, arguing that it is seasonal, occurring mainly during autumn and winter, that the incubation period is three months, that infection occurs in horses which could not possibly have had any contact, even indirect, with infected horses isolated in stables as far away as 5 km. Test inoculations are described, confirming these statements. The author states that the causal organism was found in the alimentary canal of flies that had settled on open skin lesions of infected horses. He recommends that during the spring to autumn period infected horses should be isolated in darkened stables, buildings sprayed with D.D.T. and lesions covered with gauze sprinkled with D.D.T.—F.A.A.

OLNEY, J. F. (1950.) **Actinomycosis—a new disease of turkeys.**—*Vet. Med.* 45. 392-394. 977

An outbreak of a hitherto unrecorded disease of turkeys was reported in June, 1949, to be occurring in a flock of about 9,000 poults, six weeks of age. The infection was confined to those birds bought in as day-old poults until they were put on range with the remaining locally-hatched poults at about eight weeks of age. The mortality throughout the season was approximately 45%; when the birds were marketed in December, over 10% showed lesions of the disease.

Symptoms were not especially characteristic. In the early stages, the faeces were thin and white in colour. Birds that survived longer became weak, and had yellowish diarrhoea for a week or so before death.

Lesions were present in the liver, and in most cases also in the caeca. In odd cases, lesions occurred also in the leg, on the ribs, or in the upper alimentary tract. In the liver, early lesions were seen as small pinpoint spots, which developed into hard well-defined rounded yellowish-white nodules. In the caeca there was ulceration of the mucosa, and caseous plugs were present in their lumens. In birds which survived the early infection, nodules protruded from the caecal serosa.

Histomoniasis, TB. or trichomoniasis could not be incriminated as causes. A number of nodules were ground up and placed in KOH overnight in the incubator. Smears then revealed club-shaped organisms and filaments, identified morphologically as *Actinomyces*.

—E. COTCHIN.

ENGEL, A. (1948.) **Haverhill fever (in connection with a case observed in Sweden).**—*Acta med. scand.* 132. 562-571. [In English.] 978

A general account of *Actinomyces muris-ratti* (*Streptobacillus moniliformis*) infection. The organism has been found in rats in Sweden.

MOMBERG-JÖRGENSEN, V. S. (1950.) **Enzoötic mycosis in mink.**—*Amer. J. vet. Res.* 11. 334-338. [Author's summary copied *verbatim*.] 979

Nine mink on one farm became ill with a lesion manifesting itself in the formation of subcutaneous nodules. There was a tendency to central necrosis, spontaneous perforation through the skin, and fistula formation. In some animals, the processes healed within a short time; in others, the processes extended infiltratively into the surrounding tissue; and

in 1 case, numerous metastases were found in the regional lymph node and in the myocardium. Histologic examination showed these processes to be mycotic lesions, and cultures from them showed growth of *Absidia lichtheimi*.

RIEDEL, B. B. (1950.) **Favus and its treatment with a quaternary ammonium compound.**—*Poult. Sci.* **29.** 741-742. [Author's summary copied *verbatim*.] **980**

It was found possible to infect chickens with *Anchorion gallinae* only when breaks in the skin occurred. The absence of breaks in the skin of birds may, therefore, be a factor which limits outbreaks and causes a low rate of incidence of favus under natural conditions.

One application of a two per cent. mixture of quaternary ammonium compounds consisting of equal parts of alkyl-dimethyl-benzyl-ammonium chloride and alkyl-dimethyl-dichlorbenzyl - ammonium chloride controlled the disease. The fungicide did not produce dermal or ocular toxicity.

SCHWARTZ, L., ROBINSON, M., & GANT, J. Q. (1949.) **A new treatment for superficial mycosis.**—*Industr. Med.* **18.** 257-258. [Abst. from abst. in *Bull. Hyg., Lond.* **24.** 964-965. (1949.) Signed: J. T. DUNCAN.] **981**

Dermatology is indebted to the confectionery trade for its introduction to the valuable fungistatic propionic drugs, and to the textile industry for the fungicide "Shirlan extra" (Salicylanilide), which was used with remarkable success as a topical application in the treatment of tinea capitis (*Microsporum audouini*) during an epidemic in the U.S.A. Salicylanilide was used in an ointment having the following formula: Salicylanilide 5 per cent., Hyamine 1622 (a cationic detergent) 1 per cent., and Carbowax 1500, 94 per cent. For the treatment of superficial mycoses the formula was slightly modified by substituting for Hyamine 1622 the milder Hyamine 3253 (Trimethyl octadecyl ammonium pentachlorophenate).

PECK, S. M., & LI, K. K. (1949.) **Factors in amorphous penicillin G influencing growth of fungi. I. Effect on elaboration of trichophytin by *Trichophyton gypseum*.**—*Arch. Derm., Chicago.* **59.** 498-505. [Abst. in *Bull. Hyg., Lond.* **24.** 908. (1949), copied *verbatim*.] **982**

Amorphous penicillin G added to Sabouraud's glucose medium at the rate of 10^3–10^4 units per ml. retarded the growth of *Trichophyton gypseum* [*T. mentagrophytes*] and depressed trichophytin formation. Similar concentrations of crystalline penicillin G had no effect.

LEÃO, A. E. A., & FURTADO, A. DA R. (1950.) **The fungistatic activities of vitamin K on dermatophytes.**—*Mycopath. Mycol. Applicata.* **5.** 121-124. [In English, authors' summary and conclusions slightly amended.] **983**

Four commercial preparations of vitamin K were evaluated for their fungistatic activities on the following dermatophytes: *Microsporum canis, Epidermophyton floccosum, Trichophyton mentagrophytes,* and *Trichophyton Schoenleini*. Table I lists the maximum non-fungistatic and the minimum fungistatic concentrations of each vitamin K. The fungistatic activities of the K vitamins are higher in the liquid than in the solid medium. Vitamin IV was the most active on all the dermatophytes in both the solid and the liquid medium. The fungistatic activities of the other K vitamins vary, in each medium, according to the dermatophyte. Sodium bisulfite decreases the fungistatic activities of vitamin K. *Epidermophyton floccosum* was the most sensitive to all the K vitamins used.

GOCHENOUR, W. S., JR., YAGER, R. H., & WETMORE, P. W. (1950.) **Antigenic similarity of bovine strains of *Leptospirae* (United States) and *Leptospira pomona*.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 199-202. [Authors' summary copied *verbatim*.] **984**

The results of agglutination-lysis, absorption, and animal protection tests indicate that the strains of bovine leptospira of American origin designated as New Jersey C164 and New York A are indistinguishable from *L. pomona*. These findings stress the need for reclassification of the American strains. They also indicate that L. pomona or an antigenically indistinguishable organism is present in North America.

SCHEID, W. (1949.) Leptospirenerkrankungen unter dem Bild der sogenannten idiopathischen abakteriellen Meningitis. [**Leptospirosis in the guise of idiopathic aseptic meningitis.**]—*Dtsch. med. Wschr.* **74.** 898-901. [Abst. from abst. in *Bull. Hyg., Lond.* **24.** 963. (1949), signed: J. C. BROOM.] **985**

The importance is stressed of including leptospirosis in the differential diagnosis of non-bacterial meningitis.

Examination of the cerebrospinal fluid of human beings provides no help in diagnosis between viral and leptospiral meningitis but,

in the latter condition, the red cell sedimentation rate is markedly, and almost invariably, increased during the earliest stages of illness. This is a most valuable diagnostic aid in differential diagnosis.

HEISCH, R. B. (1950.) **A case of rat-bite fever in Kenya Colony, and the discovery of rodents naturally infected with *Spirillum minus*. (Carter).**—*J. trop. Med. (Hyg.).* **53.** 33-39. [Author's summary slightly modified.] **986**

A rat-bite fever infection is described, contracted by an African in Nairobi. *Spirillum minus* was isolated from the patient's blood.

Seven of 44 rats, *R. rattus kijabius*, caught near Kwale in the Coastal Province, and others in Nairobi, were found naturally infected with *S. minus*. Scanty spirilla were also found in a blood smear from a rodent, *Otomys angoniensis elassodon*. The rodent strains were pathogenic to man.

Infections were prolonged in white mice and of comparatively brief duration in white rats, the animals remaining healthy. Guinea pigs were more susceptible, and usually died three to seven weeks after inoculation. Corneal involvement was common. Rabbits were insusceptible. *Cercopithecus* monkeys could only be infected with difficulty.

PRIESTLEY, F. W., MIHEIMID, M. A., & DAFAALLA, N. (1948.) **Preservation of the contagious bovine pleuro-pneumonia organism.**—*Vet. Rec.* **60.** 203. **987**

Strains of the bovine contagious pleuropneumonia organism lose their immunizing power after a number of subcultures on laboratory media; to prepare vaccines it is necessary to inoculate cattle with a virulent strain and to use the subcultures for a limited period while the virulence remains. The authors found that serum broth cultures when mixed with sterile horse serum and dried over P_2O_5 *in vacuo* could be maintained alive for 154 days and probably longer in a more complete vacuum than that obtained in the experiments described. The virulence was tested after 91 days in the dried condition and was found to have been retained.—A. MAYR-HARTING.

SMITH, W. E., HILLIER, J., & MUDD, S. (1948.) **Electron micrograph studies of two strains of pleuropneumonialike (L) organisms of human derivation.**—*J. Bact.* **56.** 589-601. [Abst. from authors' summary.] **988**

A strain of Nelson's coccobacilliform bodies isolated from fowls was examined. Its morphology and colonial appearance correspond to those of recognized strains of pleuropneumonia-like organisms.

ALIN, K. (1950.) **Bacterial production and destruction of histamine in vitro.**—*Acta allerg.* **3.** 136-146. [In English. Author's summary modified.] **989**

The ability to decarboxylate histidine to histamine in an acid medium was found in all investigated strains of *Bact. coli* and *Salmonella*. Some *Salmonella* strains could form histamine in a neutral medium also. No *Ps. pyocyanea* strains were found to form histamine. The ability to destroy histamine was found in *Ps. pyocyanea* and *Bact. coli*. *Ps. pyocyanea* had a higher pH optimum for histaminase activity than *Bact. coli*. Acid medium during the bacterial growth stimulates the formation of decarboxylase and inhibits the formation of histaminase in bacteria.

BILLEN, D., & LICHSTEIN, H. C. (1950.) **Nutritional requirements for hydrogenase production by *Escherichia coli*.**—*J. Bact.* **60.** 311-314. [Authors' summary copied *verbatim*.] **990**

It has been found that the production of hydrogenase by *Escherichia coli* is conditioned by the presence of certain amino acids in the growth medium, the most active of which are glutamic acid and methionine.

SIMMONS, G. C., & COTTEW, G. S. (1949.) **Growth of bacteria in the presence of peptones.**—*Aust. J. Sci.* **12.** 75. **991**

It was observed that freshly isolated strains of *Pasteurella septica* frequently failed to grow in a solution of 1% difco peptone, 1% sodium chloride and 1% Andrade's indicator which was used as a base for carbohydrate fermentation media. Eight strains of *Past. septica* were used to test the ability of difco peptone, difco proteose-peptone and difco tryptone to support growth. The carbohydrates used were glucose, maltose, sucrose, lactose and mannitol in a concentration of 1%. Growth occurred in 25% of the 40 tubes containing peptone, in 73% containing proteose-peptone, and in 100% containing tryptone. The indication of acidity was not as distinct in the tryptone medium as in the proteose-peptone. Further work showed that a medium containing 0·2% difco tryptone and 0·8% proteose-peptone was satisfactory as a basal medium for

testing the fermentation reactions of recently isolated strains of *Past. septica*.

—D. F. STEWART.

RYAN, F. J. (1948.) **On the stability of nutritional mutants of bacteria.**—*Proc. nat. Acad. Sci., Wash.* **34.** 425-435. [Abst. in *Bull. Hyg., Lond.* **24.** 236. (1949), copied *verbatim*. Signed: B. STOCKER.] **992**

The stability of a histidine-requiring mutant strain of *Bact. coli* obtained by X-ray treatment has been investigated. Undiluted cultures in a complete fluid medium, when plated on a solid medium containing no histidine, gave rise to a few (commonly about 2 per 10^8 bacteria plated) colonies of histidine-independent bacteria, physiologically indistinguishable from the wild-type *Bact. coli* from whch the dependent strain originated. Consideration of the variance of the number of such colonies produced by replicate cultures grown from small inocula suggests that these colonies result from mutations to histidine-independence occurring at random during the growth in the complete medium, and not a change "induced" by lack of histidine on plating.

No evidence of selection was found when the exacting and non-exacting strains were grown together in a complete medium, but in a medium containing no histidine, or a sub-optimal concentration of histidine, the histidine-independent organisms rapidly outgrew the dependent strain.

The author discusses methods of maintenance of growth-factor-requiring strains for biological assay purposes.

LEDERBERG, J. (1949.) **Aberrant heterozygotes in *Escherichia coli*.**—*Proc. nat. Acad. Sci., Wash.* **35.** 178-184. [Abst. in *Bull. Hyg., Lond.* **24.** 998. (1949), copied *verbatim*. Signed: B. STOCKER.] **993**

Earlier work by the author and TATUM (*J. Bacteriology*, 1947, v. 53. 673) showed that genetic recombination occurred when two different biochemically deficient mutants of *Bact. coli* strain K 12 were grown together. The evidence suggested that the postulated zygote had a very short life, probably a single cell generation. By the same method the author has now obtained some unstable prototrophic forms which continually segregate out various (stable) nutritionally deficient recombinant types; this indicates that the prototroph is growing as a (persisent) heterozygous diploid. The capacity to produce appreciable numbers of such persistent heterozygous diploids is itself inherited. The possible significance of certain anomalous segregation ratios observed is discussed. The behaviour of heterozygous strains of known genetic composition indicates that the (normal) ability to ferment lactose, etc., is dominant to the (mutant) inability to ferment, that the (normal) ability to grow in the absence of various growth-factors is dominant to the (mutant) inability to grow in their absence, and that sensitivity to phage T1 is dominant to resistance.

The existence of these heterozygotes confirms the sexual basis of genetic recombination in this organism.

DAVIS, B. D., & MINGIOLI, E. S. (1950.) **Mutants of *Escherichia coli* requiring methionine or vitamin B_{12}.**—*J. Bact.* **60.** 17-28. [Authors' summary copied *verbatim*.] **994**

A number of mutants of *Escherichia coli* have been isolated that require vitamin B_{12} or methionine. These do not respond to homocysteine, the immediate precursor of methionine. Furthermore, mutants responding to homocysteine do not respond to B_{12}. Most of the B_{12} auxotrophs grow equally rapidly on the vitamin or methionine, but two grow rapidly on methionine and slowly on B_{12}.

Tests for syntrophism show that the B_{12}-requiring mutants accumulate a precursor of methionine that feeds the homocysteineless mutants. An excess of B_{12} abolishes this accumulation with the fast B_{12} but not the slow B_{12} mutants.

In contrast to the behavior of many B_{12}-requiring lactic acid bacteria, B_{12}-requiring *E. coli* do not respond to thymidine.

It is concluded that B_{12} is concerned with the methylation of homocysteine. The nature of the genetic block resulting in slow growth on B_{12} is less clear but may involve slow conversion of B_{12} to a coenzyme of methylation.

The mutants are stable enough to be useful for B_{12} assay. The quantitative response to B_{12} is greater and more prolonged in shaken than in unshaken tubes. With such assays it could be shown that suspensions of wild type *E. coli* rapidly absorb large amounts of B_{12} from the medium.

LICHSTEIN, H. C., & WHITE, J. E. (1950.) **Studies on the disappearance of folic acid from bacterial cells.**—*J. Bact.* **59.** 751-754. [Authors' summary copied *verbatim*.] **995**

Conditions affecting the disappearance of folic acid from cells of various bacterial species are presented.

DeLamater, E. D. (1950.) **The nuclear cytology of the vegetative diplophase of** *Saccharomyces cerevisiae.*—*J. Bact.* **60.** 321-332. [Author's summary copied *verbatim.*] **996**

The nuclear activities of the vegetative diplophase of *Saccharomyces cerevisiae* have been described, and photographs substantiating the description are presented.

See also abstr. 1066 (ruminal microflora); **1100** (calf diseases); **1101** (infectious keratitis in cattle); **1148** (cortisone in syphilis); **1181** (bacteriological examination of ice-cream); **1182** (inspection of meat for *Leptospira*); **1184-1185** (*Salmonella* food poisoning); **1196** (bacteria and bull semen); **1208** (tubercle bacillus); **1213** (fungous diseases); **1230** (report, S. Africa); **1232-1234** (reports, Trinidad); **1235-1236** (reports, Fiji); **1237-1238** (reports, Nigeria); **1239** (report, Bechuanaland); **1270** (book).

DISEASES CAUSED BY PROTOZOAN PARASITES

Launoy, L., Lagodsky, H., & Jeanpierre, C. (1949.) Sur quelques caractères différentiels entre deux souches de *Trypanosoma brucei.* **[Characters of two strains of** *Trypanosoma brucei.***]**—*C. R. Soc. Biol., Paris.* **143.** 6-8. **997**

A comparison is made between an English strain (A) and a French strain (P) of *T. brucei.* Strain A was more pathogenic for g. pigs and broke down immunity to strain P infections. Strain A was less susceptible to diamidinophenoxypentane and diamidinophenoxyhexane. Both strains were susceptible to sulpharsenol but a cross inoculation 21 days after administration of the drug was fatal.

—Jas. G. O'Sullivan.

Florent, A. (1948.) La fixation de l'alexine appliquée au diagnostic de la trichomoniase du bétail. **[Complement-fixation test in the diagnosis of trichomoniasis in cattle.]**—*Zooprofilassi.* **3.** No. 12. pp. 1-9. **998**

F. described his technique of the complement fixation test for *Trichomonas foetus.* He found the lipoid fraction made from washed trichomonads to be the most active. He also tested this lipoid antigen against those used by other workers in dourine and found his lipoid antigen to be more stable and equally sensitive in a dilution of 1:6, also that it retained its activity when stored for a long time in the cold room.

In discussing the formation of antibodies in trichomonad infected animals he emphasizes two points, that the lightly infected animal does not develop antibodies and that the recall mechanism is active in an animal which has lost its titre and become re-infected.

He considers that a satisfactory diagnosis can be made using all the methods of diagnosis, i.e., visual examination, complement fixation, blood and vaginal agglutination.—W. R. Kerr.

Hammond, D. M., Bishop, V. R., Jeffs, G., & Binns, W. (1950.) **A quantitative study of** *Trichomonas foetus* **in preputial samples from infected bulls.**—*Amer. J. vet. Res.* **11.** 308-314. [Authors' summary copied *verbatim.*] **999**

Six bulls infected with *Trichomonas foetus* were studied for two to six months, with especial reference to the concentration of trichomonads in the preputial fluid.

Preputial samples were obtained by means of a pipette from each bull at intervals, usually of one or two days. After mixing the sample thoroughly, in the first part of the study, 0·05 cc. portions of the sample were examined microscopically to determine the number of trichomonads; in the later part of the study, a haemocytometer was used for this purpose.

The average period of study of each bull was eighty-six days, and the average of preputial fluid obtained at each examination was 0·52 cc.

The total number of examinations was 241 or an average of 34·4 for each bull. Of these, 217 (90%) were positive. Three bulls were positive at every examination; for the other 3, the percentage of positive examinations was 86, 80, and 45, respectively. The last bull had a concurrent infection with *Corynebacterium* species.

The 6 bulls differed greatly in the concentration and degree of fluctuation in numbers of trichomonads in the preputial samples. In 2 of the bulls, the concentration of trichomonads remained at a relatively low level. In the other 4 bulls, there were marked irregular fluctuations in concentration of trichomonads. In each of these bulls, the majority of intervals between peaks in numbers were from five to ten days in duration. The concentration of trichomonads found was less than those characteristic of vaginal samples, but was of the same order of magnitude as found in the early stage of infections in females.

In nine samples obtained by the swab method, the average number of trichomonads was only 6 per cent. of that found in nine samples obtained on alternate days from the same bull by the pipette method.

The use of a pipette for obtaining samples,

the collection of preputial fluid from the surface of the glans penis and adjacent prepuce, the examination of undiluted preputial fluid, and the repetition of sampling of suspected bulls, in accordance with the finding of marked fluctuations in concentration of trichomonads, will improve accuracy of diagnosis by means of microscopic examination of preputial fluid.

COLE, B. A. (1950.) **Effects, *in vitro*, of seven nitrofurans on the survival of *Trichomonas foetus*.**—*Amer. J. vet. Res.* **11.** 315-316. [Author's summary copied *verbatim*.] **1000**

Seven nitrofurans were tested *in vitro* and were found lethal for *Trichomonas foetus* in concentrations as low as 20·0 μg. per milliliter under the conditions of the test. It is felt that these results are sufficiently promising to warrant further investigation.

SWALES, W. E. 1950.) **On the chemotherapy of caecal coccidiosis (*Eimeria tenella*) of chickens. VII. The use of a standardized test to determine coccidiostatic properties of drugs.**—*Canad. J. comp. Med.* **14.** 269-274. [French summary.] **1001**

In a test to determine the relative value of drugs in the prevention or control of caecal coccidiosis under conditions that predispose to severe outbreaks, susceptible chicks were exposed in groups of ten in pens which had been infected with 100,000 sporulated oocysts of *Eimeria tenella* per sq. ft. of floor. Chicks 3–7 (usually 4) weeks of age were tagged, weighed and tested for haemoglobin levels by the cyanmethaemoglobin method using a photoelectric colorimeter. Body weights and haemoglobin levels were again determined on the 7th and sometimes the 14th day. The criteria of results were the mortality from caecal coccidiosis and the relative changes in haemoglobin levels, the latter representing the degree of haemorrhage in the surviving chicks. Untreated groups were used as controls and, when testing unknown or doubtful drugs, at least one group received a known coccidiostatic amount of a partly methylated sulphapyrimidine drug. —R. GWATKIN.

STURA, C. A. (1948.) Posibilidad de emplear sangre liofilizada en la premunición de los bovinos. **[The use of lyophilized blood in immunization of cattle against piroplasmosis.]** —*Gac. Vet., B. Aires.* **10.** 61-67. **1002**

Blood obtained from calves, ten months old, with piroplasms in the peripheral circulation, was defibrinated and frozen with carbon dioxide snow at 1°C., then dehydrated in high vacuum for three hours after which only a fine powder remained. A few erythrocytes were destroyed but most of them agglutinated into fairly large clusters. The powder could be stored at room temperature for long periods. On addition of distilled water, the erythrocytes laked, setting free the piroplasms. The mixture injected into healthy calves after storage for 95, 121 and 200 days produced piroplasmosis in 4, 5 and 6 days respectively. S. believes this method of storing blood may be useful for large-scale premunizing campaigns. —R. MACGREGOR.

PEARSON, C. C. (1950.) **Aralen dihydrochloride as a drug for treating field and laboratory cases of acute bovine anaplasmosis.**—*N. Amer. Vet.* **31.** 797-799. [Author's summary copied *verbatim*.] **1003**

Aralen [a quinoline derivative] dihydrochloride, an antimalarial administered intravenously to cattle affected with acute bovine anaplasmosis, caused approximately 90 per cent recovery in 89 head treated. Forty-five field cases were each given 4·5 to 9 Gm. intravenously in two doses at 24- and 48-hour intervals. Thirty-five cows and ten bulls were treated. Thirty-two cows and eight bulls recovered, thus showing approximately 90 per cent recoveries. Forty-four laboratory cases, average age four years, received 4·5 to 9 Gm. of aralen dihydrochloride intravenously at 24- and 48-hour intervals. Forty-one (93 per cent) recovered.

See also abstr. **1066** (ruminal protozoa); **1192** (trichomoniasis); **1230** (report, S. Africa); **1234** (report, Trinidad); **1237-1238** (reports, Nigeria); **1239** (report, Bechuanaland).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

STAFFE, A., & DARGUZAS, V. (1950.) Weitere Untersuchungen über die Blutkatalase künstlich mit Maul—und Klauenseuchevirus infizierter Rinder. **[Blood catalase in cattle experimentally infected with F. & M. disease.]**—*Schweiz. Arch. Tierheilk.* **92.** 375-387. [English, French, and Italian summaries. Abst. from English summary.] **1004**

In 16 cows 24 hours after injection with the Palau strain of F. & M. disease virus, there was a decrease in the blood catalase, and individual and daily variations in the level occurred, depending on the state of health, the average fluctuation being 15·3%. A mixture

of erythrocytes of normal healthy animals with the same virus *in vitro* caused a decrease in the catalase activity of 11·5%.

The following hypothesis of the catalase depressing action of the virus is put forward. By fixation of the combining factor (β-globulin) the volume of the virus particle is increased. It is absorbed by the lipoid membrane of the red blood cell through which it permeates, and causes denaturation of the stromatin containing catalase. The catalase activity is reduced by depression of the optimum pH (5·5). The oxidation processes are disturbed resulting in the formation of histotoxic anoxic foci and an increase of undecomposed hydrogen peroxide. These conditions enhance the formation of the combining factor and growth of the virus.

FOGEDBY, E. F. (1949.) Duńska produkcja szczepionki przeciwpryszczycowej. **[The production of F. & M. disease vaccine in Denmark.]**—*Med. Weteryn.* **5.** 327-329. [Abst. from English summary.] **1005**

A description of work done at the foot and mouth disease laboratoy on the island of Lindholm on the aluminium hydroxide adsorbed virus vaccine, its virulence, antigenic properties, methods of preparation and use.

LAMONT, H. G., & GORDON, W. A. M. (1950.) **Aujeszky's disease—a sporadic case in a fox terrier bitch.**—*Vet. Rec.* **62.** 596. **1006**

Diagnosis was established by the inoculation of brain suspension into rabbits, which died, after evidence of intense pruritus. Symptoms in the bitch were acute pruritus around both ears, followed by death the next day. The source of infection was not found.

—ROY MACK.

VERLINDE, J. D., & SPAANDER, J. (1949.) Neutralisatie van vaccinevirus door gammaglobuline. **[Neutralization of vaccine virus by gamma globulin.]** — *Ned. Tijdschr. Geneesk.* **93.** 2958-2962. [Abst. in *Bull. Hyg., Lond.* **24.** 1014. (1949), copied *verbatim.*] **1007**

An investigation was made about the vaccinia-virus-neutralizing power of human γ-globulin by means of the intracutaneous neutralization test on rabbits. It appeared that γ-globulin from pooled normal plasma and from persons who never were vaccinated did not neutralize the vaccinia-virus or did so in a very slight degree only. Gamma globulin from plasma of vaccinated persons, especially of those recently vaccinated, had a distinct neutralizing effect.

DONIGIEWICZ, K. (1949.) Ospa krów. **[Cow pox-variola vaccine.]**—*Med. Weteryn.* **5.** 352-354. [Abst. from English summary.] **1008**

An account of cases of cow pox in a state owned herd in the Opole district of Poland. The cows were infected by the milkers whose children had just been vaccinated. Of the total number of 41 cattle 23 became infected. The disease lasted for 60 days. Treatment is discussed.

KOBAYASHI, R., ANDO, K., TOYAMA, Y., KURATSUKA, K., ARIMA, S., SAITO, K., TAKAYAMA, Y., HIRONAKA, N., ISHII, K., HONDA, Y., & KONDO, K. (1948.) **On susceptibility of Japanese wild birds for Japanese B encephalitis virus.**—*Jap. Med. J.* **1.** 282-288. [In English.] [Abst. in *Bull. Hyg., Lond.* **24.** 637-638. (1949), copied *verbatim.* Signed: D. J. BAUER.] **1009**

In an attempt to discover the reservoir of Japanese B encephalitis studies were carried out on 10 species of wild birds captured in various parts of Japan between the months of May and October. The birds were inoculated with Japanese B encephalitis virus, and blood samples were collected daily and inoculated into mice to test for the presence of virus. Chickens, rabbits and guinea pigs were tested similarly; 47 tests were carried out in all. Virus persisted for 24 hours in the blood of *Turdus eunomus* [Eastern Fieldfare] and *Nycticorax nycticorax nycticorax* [Night Heron] when a very large dose (up to 10^7LD_{50}) was given. A small quantity of virus was occasionally detected in the blood of *Tringa ochropus* [Snipe], *Chloris sinica* [Goldfinch] and *Nycticorax* **5, 14,** and **21** days after the inoculation of a smaller dose of virus (up to 10^5LD_{50}). Neutralizing antibodies appeared in the sera in 13 instances; they were not initially present in the sera of birds captured in areas where Japanese B encephalitis was endemic. The authors conclude that the species of birds examined play no part in the infection cycle of the disease.

VON MAGNUS, H. (1950.) **Studies on mouse encephalyomyelitis virus (*TO* strain). I. The carrier state in normal albino mice and the development of a colony of mice free from *TO* virus.**—*Acta path. microbiol. scand.* **27.** 605-610. [In English. Abst. from author's summary.] **1010**

VON MAGNUS, H. (1950.) **Studies on mouse encephalomyelitis virus (*TO* strain). II. The susceptibility of ordinary albino mice compared with that of a colony of *TO*-free mice to *TO* virus inoculated by various routes,—**

Ibid. 611-624. [In English. Authors' summary slightly modified.] 1011

I. The albino mice at the State Serum Institute, Copenhagen, were found to be intestinal carriers of TO [Theiler's original] virus from 3rd–12th weeks of age, after which the excretion of virus was low and irregular. A colony of albino mice free from "natural" infection with TO virus was bred from this stock by nursing new-born mice on albino rats and later in-breeding of these mice. A comparative study was made of the behaviour of TO virus in these mice and in the original "naturally" infected stock.

Accidental infection with TO virus of a TO-free colony is a constant hazard, and it occurred five times over a five-year period in the author's laboratory. Scrupulous care must therefore be taken in the handling of such mice, and frequent tests on pooled intestinal material are necessary to make sure that accidental contamination with TO virus has not occurred.

II. Mice from a TO-free mouse colony (L-mice) were compared with ordinary albino mice (A-mice) as to their susceptibility to TO virus inoculated by the peripheral and intracerebral routes. Young L-mice were found very susceptible to the virus administered by all peripheral routes. A-mice were most often resistant; of the routes tested, oral inoculation gave the highest percentage of takes.

When intracerebral titrations were carried out, the ID_{50} obtained in L-mice was the same in all age groups examined, 1 day to 12 weeks. Inoculation into A-mice within the first 4 weeks of life gave an ID_{50} of the same order as was obtained with L-mice, although the incubation periods were found to be slightly longer in A-mice than in the corresponding groups of L-mice. However, when the age groups 6, 10 and 12 weeks were inoculated intracerebrally with TO virus, the titres were found to be lower with A-mice than with the corresponding L-mice. No such difference was observed when Lansing poliomyelitis virus was titrated in the two groups of mice. The significance of these findings is discussed.

Koštanský, K. (1948.) Je infekční obrna vepřů částí komplexu onemocnění nazvaného Mackem chřipka vepřů ? **[Is porcine encephalomyelitis part of the swine influenza complex ?]**—*Čas. československ. Vet.* 3. 97-103. 1012

K. gives an account of porcine encephalomyelitis transmission experiments carried out for over 12 years at the veterinary research institute at Ivanovice with piglets, rabbits, albino rats, white mice and one lamb, using 10% brain suspensions in physiological saline from confirmed spontaneous cases at various doses. Contrary to the results claimed by Macek [*V.B.* 19. 337], he was not able to set up the disease in animals other than pigs. This would indicate that Macek's conception that Teschen disease is an encephalomyelitic form of swine influenza and transmissible to laboratory and domestic animals other than pigs, is wrong.—E. G.

Steel, J. D., & Whittem, J. H. (1950.) **Canine distemper and distemper-like diseases.** —*Aust. vet. J.* 26. 197-212. 1013

Distemper in its clinical, pathological and aetiological aspects was reviewed and the experimental work carried out by the authors described.

The clinical syndrome commonly known as canine distemper may be caused by infection with the virus of Laidlaw and Dunkin, by the virus of contagious hepatitis, or by the virus of "hard pad" disease. The first two are considered distinct entities, but it is still uncertain whether the virus of hard pad disease is distinct from classical distemper.

No infallible clinical means is available for determining the aetiological agent in a given case, nor will pathological examination always furnish a diagnosis; in many cases animal inoculation is necessary for identification of the virus.

Neurological symptoms develop in a proportion of the dogs, by similar symptoms may develop in the absence of clinically recognizable "distemper". These syndromes are commonly associated with inflammatory changes in the brain, and the presence of virus in the central nervous system, but the possibility exists that in some cases at least, an allergic phenomenon may be involved.

In discussion on the paper, reference was made to the theory that treatment of distemper with sulphonamides may result in a higher incidence of nervous symptoms. A further factor, which, it was considered, undoubtedly influences the neurotropism of the distemper virus, is fatigue of the patient, either during the incubation period or after symptoms have developed. Another speaker suggested that the disease caused by β-haemolytic streptococci may complicate the picture of distemper.

—N. Wickham.

Goss, L. W., Cole, C. R., & Engel, H. (1948.) **Inclusion bodies, with special application to**

clinical diagnosis of canine distemper.—*J. Amer. vet. med. Ass.* **112.** 236-237. **1014**

It is claimed that, following several years' routine examination of urinary bladder epithelium obtained P.M. from suspected cases of canine distemper, a method has now been developed for demonstrating inclusion bodies in conjunctival and tongue scrapings from clinical cases.

Haematoxylin and eosin staining are preferred. The scraping is spread thinly on a glass slide; dried for 5–10 min.; fixed for 1 min. in methyl alcohol; rinsed; stained for 5 min. with Delafield's haematoxylin; de-stained with 0·2% HCl until it is reddish-blue; rinsed; and stained with 0·8% eosin in 70% alcohol for 3–5 min.

The inclusion bodies are said to appear homogeneous and to stain bright red, to vary considerably in size up to 10 μ, to be round or oval with sharply defined outline, and to occur usually in the cytoplasm but occasionally in the nuclei of epithelial cells. In experimental cases they have been noted from 5 days after the onset of symptoms.

—Alastair N. Worden.

Jflek, J. (1950.) Parotitis u zvířat a u lidí. **[Parotitis in animals and man.]**—*Čas. československ. Vet.* **5.** 309-311. **1015**

A case of acute primary parotitis in a dog is described. The dog came from a district where several cases of mumps in children had occurred. Emphasis is laid on the similarity in the aetiology, course and therapy, and the literature is discussed.—E. G.

Ginsberg, H. S. (1950.) **Modification of the course of a viral pneumonia in mice.**—*Bull. N.Y. Acad. Med.* **26.** 569-570. **1016**

Mice were inoculated intranasally with 100 M.S. 50 doses of a mouse pneumonia virus (PVM), a quantity sufficient in otherwise untreated controls to cause an early disease fatal in 5–7 days with completely consolidated lungs. Mice injected intranasally, two days after infection, with 20μg. of the capsular polysaccharide of Type B Friedländer's bacillus usually survived the experimental period [actual duration unstated], and when they were killed there was a maximum consolidation involving about 40%of the lung and a progressive resolution of the pneumonic process. Among mice injected with 20μg. polysaccharide three days after infection there was a mortality of from 1–3 in groups of 6 and a maximum consolidation of about 55% of the lung. In such mice there was a marked reduction in the extent of the viral penumonia as compared with the untreated controls.

The concentration of virus in the lungs of control mice attained its maximum on the sixth day. The concentration in mice treated with the polysaccharide did not increase after treatment, and disappearance of the non-multiplying virus began about 48 hours afterwards.

It is therefore concluded that the course of an experimental viral pneumonia can be modified by the polysaccharide, which appears to limit the concentration of virus within the host cells.—Alastair N. Worden.

Jordan W. S., & Feller, A. E. (1950.) **The relationship of complement-fixing and antihemagglutinating factors against the viruses of mumps and Newcastle disease.**—*J. Lab. clin. Med.* **36.** 369-377. [Authors' summary copied *verbatim*.] **1017**

A heat-stable factor with complement-fixing as well as antihemagglutinating activity against NDV [Newcastle disease virus] increased in titer in the sera of twelve of fifteen patients convalescing from mumps at the same time that there was an increase in titer of mumps antibody. Similar increases in titer were not found in convalescent phase sera from patients ill with a variety of other diseases. A slight increase in complement-fixing activity against NDV, in the absence of mumps antibody, developed in sera from a patient with acute pericarditis.

Sera from ninety-eight individuals were tested for complement-fixing activity against both mumps virus and NDV. Ninety-one per cent of sera with NDV factor also had mumps antibody. In three sera, NDV factor was detected in the absence of demonstrable mumps antibody.

Although complement-fixing activity against NDV may be found in sera independent of activity against mumps virus, the close correlation of the two strongly suggests that the presence of NDV factor was dependent upon the presence of mumps antibody. This relationship is best explained by assuming that mumps virus and NDV have a common antigen, or antigens, and that NDV factor developed as a response to infection with mumps virus.

The serological diagnosis of Newcastle disease in man must be made with caution.

Reagan, R. L., Werner, H. O., Schenck, D. M., & Brueckner, A. L. (1950.) **Response of the ferret and rabbit to the modified hamster-adapted Newcastle disease virus.**—*Amer. J. vet. Res.* **11.** 284-285. [Authors' summary copied *verbatim*.] **1018**

Ferrets, rabbits, and hamsters injected with the three-hundredth passage of hamster-adapted NDV showed similar symptoms, such as involuntary motor reactions, excessive salivation from pharyngeal paralysis, general paralysis, prostration, and death. Attempts to adapt this modified hamster virus to the ferret or to the rabbit by intracerebral injection were unsuccessful. This may have been due to the dilution of the original virus in successive passages, or to the resistive action of the host, or a combination of these factors.

ZARGAR, S. L., & POMEROY, B. S. (1950.) **The effects of commercial living Newcastle disease virus vaccines.**—*Amer. J. vet. Res.* **11.** 272-277. [Authors' summary copied *verbatim*.] **1019**

Results are reported on the use of two commercial Newcastle disease (ND) vaccines in two flocks of 179 and 110 birds, respectively. The chief results were: (1) Following vaccination, the birds showed clinical signs of ND which were indistinguishable from natural outbreaks. (2) A fall in egg production as a sequel to ND vaccination was a constant feature. (3) A drop in egg production was associated with the production of off-color, malformed, and soft-shelled eggs. (4) The Newcastle disease virus (NDV) was found in the yolk of 68·8 per cent. of the eggs laid two to ten days after vaccination. (5) The NDV isolated from the eggs was pathogenic for susceptible chickens. (6) The NDV was also recovered from the feces and egg shell washings of vaccinated birds.

LOOMIS, L. N., CUNNINGHAM, C. H., GRAY, M. L., & THORP, F., JR. (1950.) **Pathology of the chicken embryo infected with infectious bronchitis virus.**—*Amer. J. vet. Res.* **11.** 245-251. [Abst. from authors' summary.] **1020**

Chicken-propagated infectious bronchitis virus injected into 10-day-embryonating hen's eggs via the allantoic sac produced the following gross changes of the embryos on the first and seven subsequent passages of the virus: The chorioallantoic membrane was adherent to the shell membrane and appeared thinner than normal. The amnionic membrane was thickened, dry, fibrotic, resisted removal from the embryo, and restricted embryo movement. The volume of amnionic fluid was considerably less than normal. Living, infected embryos were sluggish and weak. Embryos were dwarfed as much as one-half normal size and had a firm, ball-like shape characterized by a curled position with a wry neck and the feet deformed and compressed over the head. Bones were softer than normal and immature in development. The leg bones and tarsal joints were deformed. Feather development was immature and the feathers were drier than normal. The skin and feathers were icteric and dermal petechiae were observed in some embryos. No abnormal odour was noticed. In about 25% of the embryos, the cloaca was distended with white fat-like droplets. Retardation of development of the body walls frequently resulted in an incomplete closure of the abdomen. Yolk material was of a firmer consistency than normal.

Of the internal organs, the liver was either haemorrhagic, icteric, or contained necrotic foci; the kidneys were usually swollen, icteric, and contained some necrotic foci; the lungs were small, pale, and viscid with a serous exudate; the heart was about one-half normal size; the spleen was enlarged to twice normal size.

In approximately 1–2% of the inoculated embryos there were no gross changes.

Microscopic changes were an excessive proliferation of the cells in the mesoderm and ectoderm, and oedema of the chorioallantoic membrane. The amnionic membrane was oedematous and in the internal organs, hepatic haemorrhage, necrosis, and abscess formation; pneumonia with marked serous exudation; interstitial nephritis and necrosis; congestion of the spleen; slight capillary congestion of the brain.

JERSTAD, A. C., HAMILTON, C. M., & PETERSON, E. H. (1950.) **Experimental transmission of infectious sinusitis of turkeys.**—*Amer. J. vet. Res.* **11.** 260-264. [Authors' summary copied *verbatim*.] **1021**

Turkeys were infected by exposure to strain S-Wn-1 agent of infectious sinusitis by: (a) drop instillation into the palatine cleft of 2- and 3-day-old poults; (b) instillation into the crop; (c) intramuscular injection; (d) subcutaneous injection; (e) swabbing the trachea; and (f) by contact with birds manifesting the respiratory form of the disease.

The incubation period varied from less than two weeks to seventeen weeks. Thirty-seven (77%) of 48 infected birds in this study became infected during the fourth, fifth, or sixth week after the first exposure. The route of inoculation seemed to determine whether the disease was manifested by sinus swelling or a lower respiratory involvement. Feces from the lower intestinal tract of a bird with swollen sinuses did not cause the disease when dropped into

the palatine cleft of 3-day-old Beltsville Small White poults.

RHODES, A. J., & CHAPMAN, M. (1950.) **Further observations on interference between lymphocytic choriomeningitis and MM** [meningo-meningitis] **viruses.**—*Canad. J. Res. Sect. E.* **28.** 245-255. [Authors' abst. copied *verbatim.*] **1022**

Well marked interference is demonstrable when LCM virus is injected cerebrally in hamsters and MM virus peritoneally four or seven days later, the usual paralyzing action of the latter virus being prevented. This interference can still be demonstrated when the MM virus is injected 30 days after the LCM virus, but not when the sequence of the injections is reversed. The unparalyzed survivors of a successful interference experiment are actively immune to LCM virus. The brain, cord, and viscera of survivors, tested 10 and 11 days after the beginning of an interference experiment, contain the same amount of LCM virus as the organs of controls inoculated with this virus alone. The same organs, however, contain significantly less MM virus than the organs of controls inoculated with MM virus only. It appears that in a successful interference experiment, MM virus is prevented from multiplying in the organs of the hamster for at least six or seven days. Observations on the distribution of LCM and MM viruses in the viscera, brain, and cord of normal hamsters show that in both instances the blood is quickly invaded, and thereafter viral growth occurs in the viscera as well as the central nervous system. The reaction between the two viruses probably therefore occurs in viscera as well as central nervous system.

GINSBERG, H. S., & WILSON, A. T. (1950.) **Inactivation of several viruses by liquid ethylene oxide.**—*Proc. Soc. exp. Biol., N.Y.* **73.** 614-616. [Authors' summary copied *verbatim.*] **1023**

Liquid ethylene oxide in a concentration of 1 volume % inactivates the viruses of influenza A, influenza B, and Newcastle disease as well as Columbia MM and Theiler's FA mouse encephalomyelitis viruses. These viruses were inactivated in the presence of 90–99% normal horse serum without any gross alterations in the serum.

VALLÉE, H. (1946.) Formolisation à doses limités et vaccination contre les ultravirus. [**Formolization and vaccination against the ultraviruses.**]—*C. R. Acad. Sci., Paris.* **222.** 775-776. **1024**

Attempts were made to neutralize virus antigens by formolization using a minimum dose of very dilute formalin and constant agitation. These operations were always carried out in complete darkness and at fixed temperatures of 22°–38°C. This method destroyed virulence whilst retaining specific antigenic value. The author adds that the dose of formalin must be ascertained experimentally for each virus and that by prolonging time and temperature of contact sterile products are obtained without having recourse to filtration.—G. V. LAUGIER.

WARREN, J., WEIL, M. L., RUSS, S. B., & JEFFRIES, H. (1949.) **Purification of certain viruses by use of protamine sulfate.**—*Proc. Soc. exp. Biol., N.Y.* **72.** 662-664. [Authors' summary copied *verbatim.*] **1025**

Suspensions of a number of viral agents can be partially purified by treatment with protamine sulfate which precipitates much of the extraneous material leaving essentially all of the virus in the clarified fluid. Preparations obtained by this simple method have potential value as antigens, vaccines and starting material for studies on the physical and biochemical nature of selected viral agents.

See also abstr. **1092** (panting, a sequel to F. & M. disease); **1179** (virus infections); **1230** (report, S. Africa); **1231** (report, Cyprus); **1232-1234** (reports, Trinidad); **1236** (report, Fiji); **1237-1238** (reports, Nigeria); **1239** (report, Bechuanaland).

IMMUNITY

BURNET, F. M., STONE, J. D., & EDNEY, M. (1950.) **The failure of antibody production in the chick embryo.**—*Aust. J. exp. Biol. med. Sci.* **28.** 291-297. [Authors' summary slightly modified.] **1026**

Injection of foreign red cells, bacteriophage or living influenza virus into chick embryos did not provoke antibody production.

No change in the subsequent response of the hatched chick to the corresponding antigen could be demonstrated.

BRAMBELL, F. W. R., HEMMINGS, W. A., & ROWLANDS, W. T. (1948.) **The passage of antibodies from the maternal circulation into the embryo in rabbits.**—*Proc. roy. Soc.* Ser. B. **135.** 390-403. [Authors' summary copied *verbatim.*] **1027**

Active immunity to *Brucella abortus* was induced in adult female rabbits. They were mated a week after the last injection of antigen and were killed and the yolk-sac contents of the embryos tested for agglutinins 8½ days after

copulation. Specific agglutinins were found to be present in the yolk-sac contents in all cases. The titre varied significantly from embryo to embryo in the same litter, and was in some as high as that in the maternal serum at the time of killing.

Passive immunity to *Br. abortus* was imparted to female rabbits 7 to 9 days pregnant by intravenous injection of immune serum of high titre. The rabbits were killed and the yolk-sac fluid of the embryos tested for agglutinins 10 to 17 hr. after injection. Specific agglutinins were present in most of the embryos from five of the six rabbits injected before 8 days post-coitum. All the embryos in the sixth rabbit were regressing. Specific agglutinins were not found in any of the embryos from two rabbits injected after 9 days post-coitum, by which time the yolk-sac fluid has ceased to increase in volume. Positive results were obtained both when rabbit and bovine immune sera were used.

Active immunity to *Br. abortus* was induced in pregnant rabbits by injections beginning after the 15th day post-coitum. The serum of the newborn young, removed from their immune mothers before they had suckled, was tested and specific agglutinins were found to be present with a titre corresponding to that of the maternal serum.

It was concluded that agglutinins, whether actively or passively acquired, pass freely from the maternal circulation into the yolk-sacs of 7- and 8-day rabbit embryos. This constitutes a delicate test of the passage of protein without alteration through the yolk-sac wall. The yolk-sac wall does not appear to be selective, since it is at least as permeable to foreign proteins as it is to those of maternal origin. Agglutinins pass from the maternal circulation into the embryo after the disappearance of the bilaminar wall of the yolk-sac also, either by way of the yolk-sac splanchnopleur or the allantochorionic placenta or both. The bearing of these results on current theories of placental permeability are discussed.

BRAMBELL, F. W. R., HEMMINGS, W. A., HENDERSON, M., & ROWLANDS, W. T. (1950.) **The selective admission of antibodies to the foetus by the yolk-sac splanchnopleur in rabbits.**—*Proc. roy. Soc.* Ser. B. **137.** 239-252. [Authors' summary copied *verbatim.*] **1028**

The yolk-sac splanchnopleur of 24-day rabbit embryos freely admits to the foetal circulation antibodies prepared in the rabbit, whereas antibodies prepared in cattle or horses are almost, but not entirely, excluded. This selectivity appears to be independent of the molecular dimensions of the antibody particles, for both rabbit agglutinins and haemolysins are admitted equally freely, whereas both equine antitoxins and bovine agglutinins are equally retarded. Selection appears to depend on the species-specific origin of the antibody molecules themselves, being independent of the other species-specific characters of the rabbit, bovine and equine sera employed.

The selectivity of the yolk-sac splanchnopleur as between rabbit and bovine agglutinins is relatively slight at 20 days post-coitum but develops progressively thereafter and is marked at 24 days post-coitum.

Individual embryos, even in the same litter, vary significantly in their capacity to admit ungulate antibodies.

The theoretical significance of the selectivity of the foetal splanchnopleur is discussed in relation to passive anaphylactic sensitization.

The technique of direct injection of immune sera into the lumen of the pregnant uterus was employed.

The antisera used throughout were the natural sera separated from the blood of immunized animals not having been subjected to any procedures for their refinement, purification or concentration.

SANDOR, G., & SKROBISZ, C. (1949.) Systèmes globuliniques du sérum et l'immunité. II. Les trois fonctions humorales de l'immunité et les trois fractions globuliniques qui les supportent dans le sérum de cheval. [**Serum globulins and immunity. II. The three humoral functions of immunity and the three globulin fractions supporting them in horse serum.**]—*Bull. Soc. Chim. biol., Paris.* **31.** 86-94. [Abst. in *Bull. Hyg., Lond.* **24.** 1017. (1949), copied *verbatim.* Signed: M. V. STACK.] **1029**

When horses are immunized, the chief modifications in serum composition are (1) a considerable increase in the least soluble protein (euglobulin 1) responsible for the agglutinating power in antibacterial sera, and (2) a rise in the pseudoglobulin content. The amboceptors of sheep haemolytic antiserum, and anti-gonococcus serum partly or wholly accompany euglobulin II A, a fraction of intermediate solubility. It is concluded that the nature of horse serum antibodies depends entirely on the endo- or exo-toxic nature of the antigen, and that this explains the solubility properties.

FREUND, J., LIPTON, M. M., & MORRISON, L. R. (1950.) **Demyelination in the guinea pig in chronic allergic encephalomyelitis, produced by injecting guinea pig brain in oil emulsion containing a variant of *Mycobacterium butyricum*.**—*Arch. Path.* **50.** 108-121. [Authors' summary copied *verbatim*.] **1030**

Mycobacterium butyricum grown on agar without glycerin differs from that grown on mediums containing glycerin with respect to morphologic and staining characteristics and spatial arrangements. This variant of *Myco. butyricum* was incorporated in a water-in-oil emulsion of guinea pig brain and injected subcutaneously into guinea pigs. Chronic encephalomyelitis developed in 4 and acute encephalomyelitis in 13 of 21 animals. In the chronic lesions there was rather extensive demyelination but no loss of axons and no gliosis.

IZSÓF, Z. (1950.) Anafylaxia u ošipaných. **[Anaphylaxis in pigs.]**—*Čas. československ. Vet.* **5.** 200-201. **1031**

On a research station in Slovakia a store pig weighing 32 kg. died of *Erysipelothrix rhusiopathiae* infection. Of 58 pigs of a similar weight which had been in contact with the infected pig, 11 had temperatures of about 40°C. and were given 20 ml. of swine erysipelas serum intramuscularly. The remaining 47 apparently healthy pigs were given 5 ml. serum along with a culture vaccine.

Four months later these pigs, which were then about twice as heavy as when first immunized, were again inoculated with serum and culture [doses not stated]. Approximately two hours after vaccination 19 of them began to pant and to vomit, their skin reddened and their temperature rose to around 39·5°C. One died during clonic spasms. P.M., the carcass was of a deep red colour and tympanitic. There were enlarged mesenteric lymph nodes, haemorrhages in kidneys and bladder and the mucosa of the small intestine was inflamed. The remaining organs appeared normal.

Eight of the more serious cases were taken to be slaughtered and one of them died during transport. P.M. findings were similar. The remaining ten pigs were segregated from the rest and given 2 ml. of a 0·1% adrenalin solution and 10 ml. of swine erysipelas serum each and all recovered the following day.—E. G.

See also absts. **924** (haemagglutination in TB.); **927** (flocculation reaction in TB.); **932** (BCG and oral vaccines); **933** (TB.); **934** (BCG); **935** (johnin); **936** (Johne's disease); **939** (polyarthritis in lambs following serum inoculation); **942** (*Pasteurella* vaccine); **953** (pullorum disease); **954** (fowl typhoid); **962** and **967** (brucellosis); **969** (tularaemia); **987** (bovine contagious pleuro-pneumonia); **998** (complement fixation test in trichomoniasis); **1002** (piroplasmosis); **1005** (F. & M. disease vaccine); **1008** (cow pox-variola vaccine); **1017** (mumps and Newcastle disease); **1019** (Newcastle disease vaccines); **1022** (interference phenomenon between lymphocytic choriomeningitis and MM viruses); **1024** (formolization and vaccination against viruses); **1187** (Hungarian serological institute).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

BRINCK, P. (1948.) Den svenska lusfaunan med särskild hänsyn till husdjurens löss och dessas bekämpande. **[Incidence and control of lice on domestic animals in Sweden.]**—*Svensk VetTidskr.* **53.** 12-16. **1032**

Eighteen species of lice, of 11 genera, have been found in Sweden, including one on horses, three on cattle, one on pigs, one on dogs, one on goats, one on rabbits and one on reindeer. Since 1944 lice have been effectively controlled with 5% D.D.T. Later, benzene hexachloride was found in laboratory tests to be 100 times more effective than D.D.T. The use of a mixture of the two insecticides [proportions not stated] were later found to be advantageous.

—F. E. W.

BABERS, F. H., & CULPEPPER, G. H. (1949.) **The effect of 2-pivalyl-1, 3-indandione on body lice, when administered orally to rabbit hosts.**—*J. Parasit.* **35.** 551-554. **1033**

A minimum daily dose of 0·15 mg. per kg. of 2-pivalyl-1, 3-indandione, administered in 50 g. of feed, prevented the reproduction of *Pediculus humanus corporis* on rabbits. At this dosage, young nymphs allowed to suck blood twice daily succumbed within three days. At a dosage of 0·125 mg. per kg. about half of the lice reached maturity and a few viable eggs were deposited. Mortality was highest among female lice, and decreased as age increased.

The rabbit blood remained toxic for only three days. In one of the three rabbits tested which died after eight months, no lesions attributable to the drug could be found.

—NESTA DEAN.

MAZZOTTI, L. (1947.) Presencia en México de *Triatoma protracta woodi*, Usinger y de *Triatoma gerstaeckeri* (Stål). **[The presence in Mexico of *T. p. woodi* and *T. gerstaeckeri*.]**—*Rev. Inst. Salub. Enferm. trop.* **8.** 69-70. [Abst. in *Rev. appl. Ent.* Ser. B. **38.** 125. (1950), slightly modified.] **1034**

During recent parasitological investigations in the north of the State of Coahuila, Mexico, *Triatoma protracta woodi* and *T. gerstaeckeri* were found in the nests of wood rats (*Neotoma*

micropus canescens) in an uninhabited region near Sabinas. The first had not previously been recorded from Mexico, but the second was collected in Nuevo León in 1941. Of 142 and 45 examples of these two bugs crushed and injected into animals, 8 and 5, respectively, were shown to be infected with *Trypanosoma cruzi*. Both have been found in the United States. No infection was demonstrated in 12 examples of the wood rat, but there is little doubt that it is a natural reservoir of the trypanosome.

KURTPINAR, H. (1947.) Anadolu ehlî hayvanlarinda görülen *Hypoderma* nevileri, iktisadî önemi ve mücadelesine dair en uygun tedbirler üzerine araştirmalar. [**Investigations on the species of *Hypoderma* that attack domestic animals in Anatolia, their economic importance and the most suitable methods of control.**]—*Çalişmalar Ankara yüksek Ziraat Enst.* No. 153. pp. iv+60. [Abst. from abst. in *Rev. appl. Ent.* Ser. B. **38.** 141-142. (1950.) **1035**

The species of *Hypoderma* observed in Anatolia were *H. bovis*, Deg., which was common on cattle, and a species considered to be *H. aegagri*, Brauer, on goats. All stages of the former and the adults of the latter are described and diverse theories as to the way in which the larvae of *H. bovis* migrate through the body to the backs of the cattle are reviewed. No larvae were found in the oesophagus of cattle brought to a slaughterhouse in Ankara between January 1942 and July 1943. First-instar individuals occurred in the spinal medullary canal beneath the skin of the back in early January, and some beneath the skin had reached the second instar in that month. Third-instar larvae were found beneath the skin in February. All had left the animals by about the end of May, and adults were observed in the field in June.

In laboratory conditions larvae pupated within 12–34 hours, and the pupal stage lasted about 25 days. Adults survived in the laboratory for up to 11 days.

It is calculated from the whole work that larvae are present in cattle from early January to June, pupae occur from mid-February to the beginning of July, and adults from the beginning of May to mid-July.

Larvae of *H. aegagri* were not found in the oesophagus or spinal canal of slaughtered goats, but occurred beneath the skin of the back from October to late March. Pupae occurred from late February to early April, and the pupal stage lasted 18–25 days in the laboratory; the adults survived for 3–5 days.

About 67% of the cattle and goats in Anatolia are infested. The annual value of the total loss exceeds 65 million Turkish pounds.

Details are given of the results of control, using derris extract and also a mixture of hydrogen peroxide and methylene blue.

NERI, I. (1949.) Sulla diversa sensibilita al DDT delle varie regioni del corpo di *M. domestica* Linn. [**On sensitiveness to DDT, differing according to the part of the body, of the house-fly.**]—*Riv. Parassit.* **10.** 65-68. [English summary.] [Abst. in *Bull. Hyg., Lond.* **24.** 887. (1949), slightly modified. Signed: C. M. HARRISON.] **1036**

The head, antennae, thorax, wings, abdomen or tarsi of house-flies of two strains, one resistant and the other non-resistant to DDT, were treated separately with a 1 per cent. DDT acetone solution. DDT-resistant flies (relatively resistant) showed the same type of toxic symptoms whatever the part treated; the non-resistant flies showed different toxic symptoms according to the part treated, the most marked reaction appearing after treatment of the tarsi.

Flies affected by DDT poisoning eventually fall on to their backs and cannot right themselves. In both strains the time taken for this reaction to occur varied with the part treated; the reaction appeared more quickly in the case of the non-resistant strain than in those flies of the resistant strain, which succumbed or showed some effect of treatment.

The percentage mortality in the resistant strain was low, many of the flies recovering after twenty-four hours, and it did not vary with the part treated. By contrast the percentage mortaliy of non-resistant flies varied markedly according to the part treated, and was most pronounced on treatment of the tarsi.

BETTINI, S., & TENTORI, L. (1947.) Insetti e vitamine. I. Revista sintetica. II. Vitamine A ed E nell' *Anopheles labranchiae* var. *atroparvus*. [**Insects and vitamins. I. General review. II. Vitamins A and E in *Anopheles maculipennis* var. *atroparvus*.**]—*Riv. Parassit.* **8.** 129-139. [English and French summaries.] [Abst. in *Rev. appl. Ent.* Ser. B. **38.** 129. (1950), copied *verbatim*.] **1037**

The authors review investigations in the literature on the importance of vitamins in the survival or development of insects and conclude that much reliance cannot be placed on the results of feeding experiments because it is usually impossible to know whether or not vitamins are supplied by the action of internal symbionts. They describe experiments in which

extracts of the bodies of newly emerged adults and fourth-instar larvae of *Anopheles maculipennis* var. *atroparvus*, van Thiel (*labranchiae* var. *atroparvus*) that had been reared in the laboratory on a diet of wheat bran were tested for vitamins A and E and vitamin E, respectively. The results, which are given in tables, showed that vitamin A was not present in the lipoids of the adults of either sex. Vitamin E was present in both adults and larvae. Since vitamin E occurs in wheat bran, but not vitamin A, it is concluded that it accumulates in the fat-body of the mosquitos as a result of larval feeding.

SEGHETTI, L., & FIREHAMMER, B. D. (1950.) **High pressure sprays in control of the sheep tick** (*Melophagus ovinus Linn*).—*J. Amer. vet. med. Ass.* **117.** 447-449. [Authors' summary slightly modified.] **1038**

The results obtained in this experiment indicate that satisfactory control of sheep keds in the autumn may be accomplished when sheep are thoroughly wetted, using a power sprayer with multiple outlet spray gun. Sprays containing DDT, benzene hexachloride, toxaphene, or chlordan were effective in the control of keds at the suggested concentrations. Spraying with a spray boom [a rectangular pipe frame the size of the chute through which the sheep are driven containing 10–12 fixed nozzles in a set pattern] was ineffective in the control of keds. Similar results were obtained in the autumn of 1948, when several hundred lambs were sprayed with a boom using 0·5 per cent DDT.

MAZZOTTI, L., & OSORIO, M. T. (1947.) Observaciones sobre la biologia del *Ornithodoros furcosus* Neumann. [**Observations on the biology of** *O. furcosus*.]—*Rev. Inst. Salub. Enferm. trop.* **8.** 57-62. [English summary.] [Abst. in *Rev. appl. Ent.* Ser. B. **38.** 125. (1950), slightly modified.] **1039**

Ornithodoros furcosus was described from Ecuador in 1908 but was not found again until many years later. In 1941, M. observed numerous examples in cracks in the walls and floors of adobe huts and also in pigsties in four localities in the mountains of that country. They apparently fed on man and domestic animals, but they may also feed on wild animals. In the laboratory they engorged on man, small laboratory animals, pigeons and *Macaca mulatta* (*Macacus rhesus*) and engorgement required only 15–20 min. Abundant coxal fluid was discharged at the end of a meal and also when the ticks were placed on a hot surface. Individuals were still surviving after five years in the laboratory. Little is known of the relation of *O. furcosus* to disease. No transmission of relapsing fever occurred when 100 field-collected samples were allowed to engorge on young mice, but M. showed that this species can harbour spirochaetes for long periods. He and G. Varela subsequently observed that examples of *O. furcosus* harboured spotted-fever rickettsiae for at least 345 days and transmitted them to their immediate progeny, but no infection resulted from the bites of 13 of the latter. In breeding experiments, development from newly hatched larva to adult was completed in 9–11 months when meals were provided at fairly regular intervals and in 19–20 months when they were given only when the ticks appeared to have fallen off in size. There wre 3–5 moults.

MILNE, A. (1949.) **The ecology of the sheep tick,** *Ixodes ricinus L.* **Host relationships of the tick. Part I, Review of previous work in Britain. Part II. Observations on hill and moorland grazings in Northern England.**—*Parasitology.* **39.** 167-172; & 173-197. **1040**

A review of the literature shows that *I. ricinus* has been recorded on 15 mammal, 21 bird, and 1 reptile species, but it is probable that any animal may act as a host. M. examined 1,008 mammals of 18 species, 320 birds of 34 species, and 25 cold blooded vertebrates of 4 species. *I. ricinus* was present on 999 of the mammals of 14 species, 289 of the birds of 24 species and was not present on any of the cold-blooded vertebrates. Six of the mammal species of this series were additional to the 21 on which the ticks had previously been recorded; similarly 18 of the bird species in this observation were additional to the 21 on which the ticks had previously been found. Only the larger wild mammals and birds are hosts to female ticks.

Evidence is presented to show that 94–99% of the female tick population are fed by sheep, but this figure may not hold good where large numbers of mountain hares and red deer are present on grazings.—G. B. S. HEATH.

AULT, C. N. (1948.) Investigaciones sobre las dificultades de combatir la garrapata *Boophilus microplus*. [**The difficulties of** *B. microplus* **control in cattle.**]—*Rev. Med. vet., B. Aires.* **30.** 174-211; & 254-297. [English summary.] **1041**

Dipping trials were carried out on 49 batches of cattle over a period of several years. In 18 batches which were sprayed, equivalent results to dipping were obtained. As arsenic can act by contact, the epicuticle of the tick

plays an important part in dip penetration, and variations in its wax layer may explain a possible increase in tick resistance. An arsenic solution is most effective at the maximum concentration, just before crystallization. The results are recorded of the use of arsenic at various concentrations and temperatures and of the addition of different agents such as rotenone or benzene hexachloride. A small number of *in vitro* tests made with D.D.T. indicated that fairly high concentrations were necessary.

Benzene hexachloride as a dip was also tested, and is recommended for this purpose in preference to arsenic.—M. L. Clarke.

Vanni, V., Infantozzi, C. M., & Prego, C. (1948.) Nuevas observaciones sobre la sarna sarcóptica del hombre y el gato. **[Sarcoptic mange in man and cat.]**—*An. Fac. Med. Montevideo.* **33.** 457-465. [Abst. in *Bull. Hyg., Lond.* **24.** (1949), copied *verbatim.* Signed: H. Harold Scott.] **1042**

By taking biopsy specimens with an electric bistoury in the early stages of scabies in man (*Sarcoptes scabiei* var. *hominis*) and sarcoptic mange in cats (*Sarcoptes minor* var. *cati*) the authors have demonstrated the pathology of the early stages of this condition. A "hyaline tube", produced by the irritant saliva of the mite, a fluid which is also keratolytic, precedes the actual formation of the furrow occupied by the pregnant female. The fluid produced by the saliva, and by its keratolytic action, contains histamine-like substances and causes the pruritus and the resulting pruriginous dermatoses. Other histological studies show that the larval and nymphal stages are not completed at the skin surface but in the layers of the skin itself where the chitinous remains of the respective moults can be seen. Sometimes abortive or atypical forms of the disease are seen which clear up without treatment; these are said to be due to the cat mite (*Sarcoptes minor*) which in the early stages can develop in the human skin, but does not go to full development there. The lesions produced are well shown in a series of photomicrographs.

Laird, M. (1950.) **Notes on the infestation of man by the chicken mite *Dermanyssus gallinae* (de Geer), in New Zealand.**—*N. Z. Med. J.* **49.** 22-23. **1043**

D. gallinae infestation of man in New Zealand is recorded. At Parengarenga Harbour, the mite was found on grass near the coastal mud flats. There were no poultry within one mile of the area and it is suggested that the parasite is mantained on shore birds. Infestation of man was also encountered at Whenuapai when it was traced to heavily infested starlings' nests in the roof of a building.—L. K. Whitten.

See also abstr. **976** (biting flies spreading epizootic lymphangitis); **1154** (insecticide); **1230** (report, S. Africa).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Baker, D. W. (1950.) **Lancet fluke (*Dicrocoelium dendriticum*) infection in sheep in New York State.**—*Cornell Vet.* **40.** 97-100. **1044**

Dicrocoelium was first reported as occurring in cattle in the U.S.A. in 1941. Despite intensive search, it was not found in sheep until 1948. This is a preliminary note on the discovery.—G. B. S. Heath.

Doeksen, J., Heringa, K., & Swierstra, D. (1949.) Voorlopige mededeling over de schade door de leverbot bij rundvee veroorzaakt. **[Preliminary report on distomatosis in cattle.]**—*Maandbl. Landbouwlichtdst.* **6.** 219-220. [Abst. in *Helminth Abstr.* **18.** 100. (1950), slightly modified. Signed: P. L. le R.] **1045**

Doeksen, Heringa & Swierstra draw attention to the losses in decreased milk and beef production due to fascioliasis in cattle in the Netherlands. Milking tests revealed that infestation with liver-flukes caused an 11·5% decrease in milk yield. This amounts to an annual loss which is estimated at approximately 19 million guilders. Losses due to decreased body-weight in slaughter stock are estimated at 4 million guilders. They consider that these amounts warrant the institution of prophylactic measures for the control of fascioliasis. It is announced that the Veterinary Faculty of the University of Utrecht, the Agricultural Association T.N.O., and the Central Agricultural Research Institute at Wageningen have formed a liver-fluke working-party for the investigation of better control measures and the collection of relevant data.

Watts, N. P., & Boyd, F. A. (1950.) ***Schistosoma mansoni* miracidium under phase difference microscopy.**—*Stain Tech.* **25.** 157-160. [Authors' abst. copied *verbatim.*] **1046**

The living, immobilized miracidium form of the *Schistosoma mansoni* has been photographed at the same plane under ordinary bright

field and under phase contrast illumination. Under the latter method more of the internal structures are visible.

McCLEERY, E. F., & BLAMIRE, R. V. (1950.) **Bovine cysticercosis in Great Britain. Some cases and comments.**—*Vet. Rec.* **62.** 477-479. [Abst. from authors' summary.] **1047**

Two cases of generalised *Cysticercus bovis* infestation are described in oxen slaughtered at an abattoir. Abattoir statistics indicate an average infestation of about 0·3 per cent. cattle slaughtered in England and Wales during 1949, and there is some evidence to show that the infestation is increasing. The routine examination for *Cysticercus bovis* as laid down in Great Britain is criticised as being insufficient.

STEWART, D. F. (1950.) **Studies on resistance of sheep to infestation with *Haemonchus contortus* and *Trichostrongylus* spp. and on the immunological reactions of sheep exposed to infestation. I. The preparation of antigens for the complement fixation test and the reactivity of the biochemical fractions of *H. contortus*. II. The antibody response to infestation with *H. contortus*.**—*Aust. J. Agric. Res.* **1.** 285-300; & 301-321. [Author's summaries copied *verbatim*.] **1048**

I. An antigen was developed to detect circulating antibodies by means of the complement fixation test in sheep infested with *Haemonchus contortus* and *Trichostrongylus* spp. Extraction of worm material at 100°C. for 10 minutes was found to be the most satisfactory method for the preparation of antigens. Potent antigens were prepared from young adult *H. contortus*, from third-stage infective larvae, and from the eggs. Old mature adult *H. contorus* yielded antigens of low potency. No significant difference was found between the potency of antigens prepared from male and female adult *H. contortus* collected from the same sheep. Both adult *Trichostrongylus* spp. and third-stage infective larvae consistently yielded antigens of high potency.

No significant difference was found in the results obtained with larval or adult *H. contortus* antigens, adjusted to the same potency and tested with natural *H. contortus* antisera. *H. contortus* and *Trichostrongylus* spp. absorbed the antiserum to each other.

It was shown that a lipid was an essential constituent of the boiled antigen in the complement fixation reaction with natural antisera. Lipid-free antigens from *H. contortus* failed to react with natural antisera. The lipid was not antigenic when injected into rabbits. The carbohydrate fraction of *H. contortus* did not fix complement in the presence of natural antisera and was not antigenic when injected into rabbits.

The lipid fraction of a variety of nematode parasites reacted with natural antisera to *H. contortus* infestation. Similar lipid fractions of two species of trematodes did not react with natural antisera to *H. contortus* infestation. Normal saline suspensions of the lipid-free material from a variety of helminths showed a greater degree of specificity when tested with artificially prepared antisera than did the lipid fractions.

II. The serological reactions to infestation with *H. contortus* were studied in penned sheep. For critical studies, sheep born and reared in a worm-free environment were used. In infestation with *H. contortus*, the antibody response was stimulated by the administration of third-stage infective larvae and as the infestation developed the antibody response declined. Established infestation with mature *H. contortus* did not stimulate the formation of antibodies. The sera of sheep dying from infestation with *H. contortus* were negative to the complement fixation test.

Ground, mature *H. contortus* given to sheep by mouth or injected into the rumen did not elicit any antibody response. Infective larvae of *H. contortus*, killed by heat and given to sheep by mouth, did not stimulate an antibody response. When heat-killed larvae were injected into the rumen, a rise in titre at times took place, but it was usually transient.

When a dose of infective larvae of *H. contortus* was superimposed upon an existing infestation of *H. contortus* or *Trichostrongylus* spp. either the existing infestation was eliminated or the egg output of the parasites was suppressed. This phenomenon was accompanied by a rise in serum titre. Elimination of the infestation of *H. contortus* or *Trichostrongylus* spp. was not usually followed by resistance to the development of the superimposed larvae. The injection into the rumen of heat-killed larvae of *H. contortus* did not have the same effect as the oral administration of live larvae.

Efforts to protect sheep against infestation with either H. *contortus* or *Trichostrongylus* spp. by means of vaccines prepared from ground, infective larvae were unsuccessful. Evidence was obtained that the artificial stimulaiton of antibodies, by means of intravenous injections or formalinized, ground larvae, influenced the course of existing infestations with *H. contortus*.

DE BRITO GUTTERRES, J. (1948.) Haemonchus santomei, n. sp. parasite de la caillette du boeuf de S. Tomé. [*Haemonchus santomei* **in the abomasum of cattle.**]—*Rev. Med. vet., Lisboa.* **43.** 213-221. **1049**

The parasite was found by the author in the abomasum of oxen in the Portuguese equatorial island of S. Tomé. Three characteristics show it to be different from *H. contortus;* a cephalic cuticular dilatation; its measurements; its presence in the abomasum of cattle but never in goats (the usual carriers of *H. contortus* in S. Tomé).—F. A. ESTEVES.

NOVÁKOVÁ, E. (1950.) Syngamosa u lovného bažanta (Phasianus colchicus L.) v době odstřelu. [*Syngamus trachea* **in wild pheasants in Czechoslovakia.**]—*Čas československ. Vet.* **5.** 301-306. [French summary.[**1050**

Of 4,904 pheasants examined during the autumn and winter of 1949-50, 11 harboured 1–2 adult gapeworms, 7 of the affected birds being under one year and the remainder under two years of age. None were found in birds over two years old. The worms were present in October and the first half of November and in one instance in the first week of February, but not in the later winter months.

Results of examinations are tabulated.

—E. G.

KRASTIN, N. I. (1949.) [**Elucidation of the life-cycle of** *Thelazia rhodesii* **(Desmarest, 1827), parasitic in the eyes of cattle.**]—*Dok. Akad. Nauk SSSR.* **64.** 885-887. [Abst. in *Helminth. Abstr.* **18.** 84-85. (1950), copied *verbatim.* Signed: C.R.] **1051**

To find how *Thelazia rhodesii* larvae are released from their final host, Krastin examined daily the tears and nasal exudate of infected animals. He found 1–26 larvae in 37 out of 46 tear samples, but found them only once in 37 samples of nasal exudate. He also observed the parturition of larvae from eight females placed in warm saline. Krastin concluded that the intermediate host must come into contact with larvae in these secretions. Twenty calves kept in paddocks near the farm during the day and in a calf shed at night between May and July 1946 became heavily infected. In a second experiment between May and August 1946, calves kept during the day in the open and at night in a calf shed became infected, while calves kept in a covered place day and night were not infected, which suggested that the intermediate host must be a flying insect. Krastin experimented with 13 young cattle whose eyes were protected from contact with insects by special masks. During the time of the experiment (lasting from 5th June to 4th August) none of the protected eyes was found infected, while unprotected eyes were found infected from 1st July. At the same time Krastin collected one of the common species of Muscidae which actively attack the eye region of cattle in the district where *T. rhodesii* is very common. When some of the flies were placed in a slightly alkaline solution at 37°–38°C. they produced infective larvae. In flies examined in August and September larvae were found in the head, thorax and abdomen. Those in the head and thorax were free, whilst those in the abdomen were enclosed in connective tissue capsules. It was found that larvae which left of their own accord and those artificially removed from the head, thorax and abdomen of the intermediate host continued their development in the conjunctival sac. Thus, according to Krastin, the larvae of *T. rhodesii* reach the infective stage in the thoracic region of a fly, free themselves from their capsules and migrate to the head, where they concentrate in numbers from one to nine. The flies infect cattle by inoculation of larvae when attacking the eyes. In the Far East region (Haberousk [Khabarovsk] district), *Musca convexifrons* was responsible for the transmission of this parasite.

KRASTIN, N. I. (1949.) [**Epizoology of thelaziasis in cattle, and biology of** *Thelazia rhodesii* **(Desmarest, 1827).**]—*Veterinariya, Moscow.* **26.** No. 4. pp. 6-8. [Abst. in *Helminth. Abstr.* **18.** 118-119. (1950), copied *verbatim.* Signed: C.R.] **1052**

The larvae of *Thelazia* concentrate in the eye and nose secretion where they are collected by the intermediate host, *Musca convexifrons.* The development of larvae in the fly takes approximately one month. Infection of cattle takes place when the infected fly touches the eye secretion or the conjunctiva. The worm reaches maturity in about two months. Krastin recommends tar as a fly repellent placed near the internal angle of the eye.

KLESOV, M. D. (1949.) [**Epizoology and therapy of bovine thelaziasis.**]—*Veterinariya, Moscow.* **26.** No. 4. pp. 9-12. [Abst. in *Helminth. Abstr.* **18.** 118-119. (1950), copied *verbatim.* Signed: C.R.] **1053**

This study by Klesov of the epizoology of *Thelazia rhodesii* in a very large number of abattoir cattle showed that the lowest incidence of eye infection was in April (10%) and the highest in January (67·3%). In one group under experiment the lowest incidence was in May (7%). The infection in April and May consists of mature worms only. June is the

month when the adults die off and the infection is of young forms only. That is the period when conjunctivitis generally occurs. The infection in this month reaches 44%, in August 51·7% and in September 85·7%. In another group at pasture, infection in June reached 61·7%, in July 76%, in August 79% and in September 90·5%. Until 20th August only young forms were found. At the end of August adults appeared. In October infection reached 91·2% in animals in the abattoir and 91·1% in those under observation at pasture. In November-December it fell to 55–61% and its lowest point was reached in April and May. He recommends the treatment of all animals during December to February, so that contact in summer with the intermediate host (*Musca*) will be avoided. The eyes should be irrigated three times in succession with 50–75 c.c. of a solution of 1·0 gm. iodine crystals and 1·5 gm. potassium iodide in 2,000 c.c. water.

SCHWABE, C. W. (1950.) **Studies on *Oxyspirura mansoni*, the tropical eyeworm of poultry. III. Preliminary observations on eyeworm pathogenicity.**—*Amer. J. vet. Res.* **11.** 286-290. [Author's summary copied *verbatim*.] **1054**

This paper presents the results of several preliminary experiments on eyeworm pathogenicity, designed to show the percentage survival of ingested infective larvae, the reactions of previously uninfected birds to an initial introduction of infective larvae, the symptoms exhibited by chickens in uncomplicated eyeworm infections, and the pathology evident in an uncomplicated infection of this type. Experimentally induced infections resulted in temporary discomfort and some histopathologic changes; however, advanced ocular pathology and blindness were not produced, probably because of the absence of secondary infections in the experimental birds.

The approximate maximum number of worms that can be accommodated in the eyes of a single bird appears to be 200.

GNEDINA, M. P. (1949.) **[Onchocercosis in cattle.]**—*Veterinariya, Moscow.* **26.** No. 9. pp. 31-32. **1055**

A general account of onchocercosis in cattle. Details of a skin test used for diagnosis are given. The use of D.D.T. for prophylaxis is described.—F. A. A.

SOKOLIĆ, A. (1949.) Askarol i njegova primjena u nekoliko pokusa kod svinja invadiranih askaridama. **[Ascarol, a proprietary preparation used as an anthelmintic in pigs.]**—*Bilten Vet.* **2.** Nos. 2/3. pp. 37-53. [English, German and Russian summaries.] **1056**

Pigs infested with ascarids were given a proprietary preparation containing 10% of oil of chenopodium at a dose rate of 0·5–1·0 ml. per kg. body weight. S. states that it was administered intranasally. After the second treatment the faeces of 36–60% of treated pigs were free from ascarid eggs.—E. G.

GUILHON, J. (1949.) Propriétés anthelminthiques d'un dérivé de la pipérazine. **[Anthelmintic activity of a piperazine derivative.]**—*Bull. Acad. vét. Fr.* **22.** 361-363. **1057**

Preliminary tests indicated that in doses which have been reported active against filaria, the citrate of 1-diethylcarbamyl 4-piperazine has little if any activity against *Ascaridia, Ascaris suum, Toxocara canis, Capillaria* (a trichurid), the gastro-intestinal strongyles of the dog and the sheep, *Angiostrongylus vasorum,* or *Dicrocoelium lanceolatum.* The substance is well tolerated by host animals, and higher doses might prove effective.—NESTA DEAN.

LAZARUS, M. (1950.) **The respiratory metabolism of helminths.**—*Aust. J. sci. Res.* Ser. B. **3.** 245-250. [Author's summary slightly modified.] **1058**

The respiratory metabolism of the trematode *Paramphistomum cervi* and the nematodes *Haemonchus contortus, Ostertagia circumcincta, Syphacia* sp., *Heterakis spumosa, Strongylus equinus,* and *Strongylus vulgaris* have been examined.

The nematodes gave Qo_2 values [oxygen uptake in μ l. per dry weight of tissue per hour] ranging from $-7·4$ to $-1·1$. When calculated on the basis of the relative surface areas of the parasites the differences in oxygen uptake were much smaller. Cyanide inhibited the uptake of oxygen; R.Q. [respiratory quotient] values ranged from 0·8 to 3·3. Nematodes inhabiting those parts of the gut in which bacterial fermentation is most active generally showed higher R.Q. values.

Paramphistomum cervi gave the low Qo_2 of $-0·03$, and an R.Q. of 8 or over. Cyanide caused a pronounced increase in the uptake of oxygen. When the trematodes were incubated aerobically *in vitro* the R.Q. gradually fell and the activating effect of cyanide decreased. The cyanide activation of oxygen uptake of mince prepared from *Paramphistomum cervi* was not obtained when methylene blue was present. The present investigation has shown that the pattern of respiratory metabolism in helminths may vary, even among morphologically related

forms. However, different species of parasites from regions of similar physiological activity in the host show some similarity in the nature of their respiratory activity.

MASSY, V., & ROGERS, W. P. (1950.) **The intermediary metabolism of nematode parasites. I. The general reactions of the tricarboxylic acid cycle.**—*Aust. J. sci. Res. Ser. B.* **3.** 251-264. [Authors' summary slightly modified.] **1059**

The oxygen consumption of mince prepared from *Nematodirus filicollis, N. spathiger, Ascaridia galli,* and *Neoaplectana glaseri* was stimulated by the addition of pyruvate, α-ketoglutarate, succinate, fumarate, malate, and oxaloacetate. Citrate did not stimulate respiration. When mince from *Nematodirus* spp. and *Ascaridia galli* were fortified with coenzymes, the inhibition due to malonate was decreased by adding intermediates of the tricarboxylic acid cycle, and the accumulation of succinate in the malonate-poisoned mince was increased when fumarate, fumarate plus pyruvate, or citrate was added.

When calcium ions were present in the medium in which the mince was suspended, the results indicated that only isolated reactions of the tricarboxylic acid cycle were taking place because succinate failed to decrease malonate inhibition and did not accumulate even when fumarate or pyruvate was added. The characteristic reactions of the whole cycle could be obtained by omitting calcium chloride from the medium or by adding adenosinetriphosphate, diphosphopyridine nucleotide, and triphosphopyridine nucleotide.

On the basis of these results, it is suggested that some form of the tricarboxylic acid cycle functions in the tissues of the parasites.

EPPS, W., WEINER, M., & BUEDING, E. (1950.) **Production of steam volatile acids by bacteria-free *Ascaris lumbricoides*.**—*J. infect. Dis.* **87.** 149-151. [Authors' summary copied *verbatim.*] **1060**

A procedure is described by which living bacteria-free *Ascaris lumbricoides* can be obtained. Bacteria-free ascarids produce considerable quantities of valeric acid and/or its isomers [fatty acids volatile in steam.].

See also absts. **972** (black disease and liver fluke); **1231** (report, Cyprus); **1232-1234** (reports, Trinidad); **1235-1236** (reports, Fiji); **1238** (report, Nigeria).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

NANTA, MARQUÉS, LASSERRE, BAZEX, BRU, & PUGET. (1950.) Les tumeurs vénériennes du chien. Cadre nosologique. **[Venereal granulomata in dogs.]**—*Rev. Méd. vét., Lyon et Toulouse.* **101.** 298-310; 356-366. **1061**

This study is based on the examination of 176 specimens, encountered in the course of 20 months, of the so-called "venereal sarcoma" of the dog.

The clinical appearances varied, with a correspondingly variable histological picture, which is reflected in the different names applied to the lesion, and in the difficulty of precise histological classification. The specific cells might be small or large, with scanty, or abundant lipoid-containing cytoplasm. The proportion of specific cells to stroma varied, sometimes the former and sometimes the latter predominating. The growths varied in vascularity and there was a variable infiltration with mononuclear cells. The histological picture varied not only from specimen to specimen, but also in different parts of the same specimen. Grafting showed that a given specimen might produce lesions of a different histological structure.

The unity underlying this pleomorphic histological structure was elucidated by studying impression smears, stained May-Grunwald-Giemsa, from which the essential cells of the growth were identifiable as being all mesenchymal in type, and comprising various derivatives of the reticulo-endothelial system. From a consideration of the structure of the lesions, it was concluded that the proliferation of these reticulo-endothelial cells was not neoplastic but inflammatory in nature.—E. COTCHIN.

ANDERVONT, H. B. (1950.) **Attempt to detect a mammary tumor-agent in strain C mice by X-radiation.**—*J. Nat. Cancer. Inst.* **10.** 1157-1189. [Author's summary copied *verbatim.*] **1062**

An experiment was performed to ascertain whether low-mammary-tumor-strain C females harbored a weak or masked mammary tumor-agent.

The C females were exposed to a single dose of 25, 50, 100 or 200 r of whole body X-radiation and then bred to nonirradiated high-mammary-tumor-strain C_3H males. If irradiation enhanced the activity of the agent in C females then the $C \times C_3H$ hybrids born to

irradiated females should develop tumors at an earlier average age than those born to non-irradiated C females.

The results confirmed the high incidence of mammary tumors in F_1 hybrids born to strain C females and strain C_3H males, but there was no significant difference between the tumor incidences or the average ages at which tumors arose in the hybrids born to irradiated and nonirradiated C mothers.

Five hybrids, representing 4 litters, developed mammary tumors at an early age and carried the mammary tumor-agent. This also confirmed previous observations. The 5 mice were offspring of C females that had received 100 or 200 r of X-radiation. Litter mates of these hybrids developed tumors late in life, and, apparently, did not carry the agent.

Of the 4 C mothers of the agent-bearing hybrids, 2 developed mammary tumors and 2 did not. Their spleens were tested for the agent by inoculation into susceptible test animals and the results indicated that 3 carried the agent and 1 did not.

Four other strain C females developed tumors. Two were exposed to X-radiation and 2 were nonirradiated controls. The spleen of 1 irradiated mouse was tested and found to contain the agent. F_1 hybrid offspring of this mouse developed tumors or died tumor free at a late average age, and, presumably, did not harbor the agent.

The findings in C females extended previous results by showing that, after mating with strain C_3H males, some strain C females possessed the agent and that these mice did not apparently transmit the agent to all their offspring.

Studies on the histologic appearance of the tumors in $C \times C_3H$ hybrids revealed 4 groups of tumors. Three of these groups were adenocarcinomas: In one (type A) the acinar structure predominated, another (type B) showed little acinar formation but possessed a variable pattern of solid groups of epithelial cells, single layers of cuboidal cells lining cystic spaces or growing as papillary projections into cysts, and cords of cells separated by a heavy stroma. In the third (type C) there were many small cysts and epithelial proliferation in the intestinal tissue. The fourth group of tumors were adenoacanthomas showing large areas of squamous-cell elements.

Type A adenocarcinomas predominated in the 5-to-19-month-old hybrids, and were the only tumors encountered in the 5 young agent-bearing hybrids, whereas type B predominated in hybrids over 19 months of age. Thus, there was a correlation in the morphology of these mammary tumors and the age of the animals in which they arose.

VIDEBAEK, A. (1948.) **Sex hormones and leukemia.**—*Acta med. scand.* 132. 124-131. [In English. Author's summary modified.] **1063**

It appears from the literature that inbred strains of mice usually exhibit a higher incidence of leukemia in females than males and that estrogens accelerate leukemia, whereas androgens inhibit its development. In strain AKa the incidence of leukemia is highest in females and they acquire leukemia at an earlier age than males. Pregnancy does not accelerate leukemia.

SUGIURA, K., & ARKIN, A. M. (1950.) **Comparative specific gravities of normal and tumor tissues.**—*Proc. Soc. exp. Biol., N.Y.* 73. 625-628. [Authors' summary copied *verbatim*.] **1064**

The specific gravity of tumor and normal tissues of mice and rats was determined by flotation in sodium chloride solutions of known concentrations. The density of tumor tissue was always less than that of heart, liver, spleen, kidney and muscle of the host. Several human tumors were tested and exhibited the same property.

DMOCHOWSKI, L., & MILLARD, A. (1950.) **Cellular transmission of mouse sarcomata with frozen-dried tumour tissues.**—*Brit. med. J.* Nov. 18th. 1136-1137. [Authors' summary and addendum slightly modified.] **1065**

Suspensions of frozen and desiccated sarcoma cells embedded in clots formed by the addition of chick embryo extract to a mixture of rat and fowl plasmas were inoculated subcutaneously into mice. Sections of clots excised at varying intervals after grafting revealed the presence of viable tumour cells, increasing in numbers with the age of the grafts.

During the preparation of the above paper for publication an additional experiment along similar lines with the C_3H sarcoma (0·8 g. of tissue in 1·5 ml. of 5·3% glucose), frozen at −79°C. for 95 days and desiccated for 210 minutes, was carried out. In spite of the prolonged desiccation, an increasing number of tumour cells were seen in the clots taken out at various intervals after grafting.

See also abst. **1229** (report, N. Ireland).

NUTRITIONAL AND METABOLIC DISORDERS

POUNDEN, W. D., & HIBBS, J. W. (1950.) **The development of calves raised without protozoa and certain other characteristic rumen microorganisms.**—*J. Dairy. Sci.* **33.** 639-644. [Authors' summary copied *verbatim.*] **1066**

The growth and development of four Jersey calves which were raised in pens segregated from other cattle were compared with 12 others which were inoculated with cud material from older cattle and raised at the same time on similar rations of alfalfa hay and limited quantities of grain.

The uninoculated calves failed to develop usual protozoa in their rumens and also some varieties of characteristic rumen microflora which were used as indicators of the presence of usual rumen microorganisms. One of the four calves accidentally received a partial rumen inoculation. This resulted in one type of the characteristic indicator microflora which readily is digested by abomasal fluids becoming established in its rumen.

Average gains in weight at 6 months of age were 229 lb. for the four uninoculated calves and 235·5 lb. for the 12 inoculated animals, a difference of only 6·5 lb. The calf which received the partial rumen inoculation had a neat and healthy appearance similar to the control inoculated calves, but the hair coats of the other three were much rougher in appearance. Their abdomens seemed deeper and "pot-bellied". The latter three had a persistent habit of nosing down through the bedding to pick up wet bits of straw. It was considered possible that this habit was due to a stimulus to seek inoculation of their rumens with substitute rumen microorganisms in the absence of the usual microflora and fauna.

COWAN, I. MCT., HOAR, W. S., & HATTER, J. (1950.) **The effect of forest succession upon the quantity and upon the nutritive values of woody plants used as food by moose.**—*Canad. J. Res.* Sect. D. **28.** 249-271. **1067**

The moose, *Alces americana,* reaches its greatest populations in British Columbia in young second growth forest areas. Numbers decrease, as a result of malnutrition, as the forest approaches its climax stage. From the present study of three stages in forest succession, growing under the same conditions of soil and climate, it was determined that the forest changes studied involved a reduction in palatable browse to about one-third; that there was an increase of carotene values and possibly of total mineral content in the vegetation on more advanced forest areas, but that in ascorbic acid content, ether extractives, total carbohydrates and proteins, the vegetation upon the younger forest areas was superior to that on the older areas. The declining carrying capacity in a forest approaching its climax stage results from decreases in quantity and quality of the food produced. The most desirable winter range for moose is one on which there is a variety of palatable species, predominantly in an early stage of growth but with an intermixture of older forest stands bearing palatable coniferous trees.

—R. GWATKIN.

RIEK, R. F., HARDY, M. H., LEE, D. H. K., & CARTER, H. B. (1950.) **The effect of the dietary plane upon the reactions of two breeds of sheep during short exposures to hot environments.**—*Aust. J. agric. Res.* **1.** 217-230. [Authors' summary copied *verbatim.*] **1068**

Five Camden Park Merino and six Corriedale ewes, each breed divided into three groups and offered the food corresponding respectively to high, medium, and low dietary levels, were exposed for seven hours a day, one to three days a week, to each of several selected hot atmospheres over a range of temperatures 30 to 45°C., and a range of vapour pressures 15 to 40 mm. Hg. Observations were made on the rectal temperature, pulse rate, respiratory rate, respiratory volume, evaporative water loss, food and water consumption, body weight, and behaviour.

These sheep were relatively tolerant of the hot conditions, only the high-plane Corriedales having to be removed before the completion of the seven hours' exposure from the atmosphere 40°C./40 mm. Hg., with a rectal temperature over 107°F.

A sharp rise in respiratory rate followed commencement of the exposure, the rate in the Merino being the higher under all hot conditions above the mildest (30°C./30 mm. Hg.). The average maximum rates obtained for four sheep were 370/min. for the Merinos and 290/min. for the Corridales. Pulse rates showed little change from normal rates of 60–65/min. until air temperature or humidity reached high levels.

The rise in vapour pressure at an air temperature of 40°C., which produced the same effect as a rise of 1°C. in air temperature at a vapour pressure of 30 mm. Hg., was 0·25 mm. Hg. for rectal temperature, 1·7 mm. Hg. for

respiratory rate, and 2·3 mm. Hg. for respiratory volume.

A high-plane diet reduced the heat tolerance of sheep, and heavy individuals actually lost weight during the experimental period. A very low diet, on the other hand, also impaired heat regulation, probably as part of a general depression of function. Sheep on a medium-plane diet fared best.

It is difficult to account for observed water losses under hot conditions unless sweating is admitted.

EDWARDS, L. C. (1948.) **Some notes on the food of goats in a semi-arid area.**—*E. Afr. agric. J.* **13.** 221-223. **1069**

Deciduous thicket untouched by man will not support a large goat population as the leaves are usually out of their reach, but when it is felled or thinned it will usually support a large number. A list of 67 trees, shrubs and plants is given, divided into: "extremely palatable", when all the leaves are eaten; "palatable"; and "no particular attention paid". Goats eat the green leaves and twigs during the period of "leaf flush" and in arid seasons eat the fallen leaves. They never eat grass unless compelled to do so, and never ring-bark young trees. These observations were made personally by the author, who states that he has invariably found that information obtained from owners is unreliable. He concludes that the goat is not really a destructive animal.—R. MACGREGOR.

GRANADOS, H., GLAVIND, J., NOER, B., & DAM, H. (1950.) **Studies on the growth-promoting action of human saliva.**—*Acta path. microbiol. scand.* **27.** 501-505. [In English. Abst. from authors' summary.] **1070**

Of three groups of weaned golden hamsters fed a purified diet containing all the chemically known vitamins for 12 weeks, group (1) was given water alone to drink; groups (2) and (3) were given drinking water containing saliva from three male and three female subjects respectively.

The results indicated that human saliva, at least from sexually mature individuals, contains a growth factor (factors) different from the chemically known vitamins (including vitamin B_{12}).

Vitamin B_{12} was present in human saliva in a concentration of 0·00015–0·0005 μg. per ml.

FRENS, A. M. (1941.) Koperdeficientie bij rundvee. **[Copper deficiency in cattle.]**—*Tijdschr. Diergeneesk.* **68.** 763-767; & 768. **1071**

An account is given of the condition produced by a copper deficient diet in a herd of heifers and calves. These animals were grazing on pasture which was found to contain as little as 1·3 mg. per kg. of grass. A content of copper varying from 0·60 mg. to 0·68 mg. per 1,000 ml. of serum was found in the blood of some of the affected animals. The estimation of copper was made by the dithizone (diphenylthiocarbazone) method. Symptoms were not always characteristic and consisted mainly in loss of condition and retarded growth of the calves. No excessive licking had been noticed nor was diarrhoea evident. F. stresses the importance of the characteristic depigmentation of the larger hairs around the eyes which was noticed on most of the affected animals. A dosage of 0·5 g. of $CuSO_4$ $5H_2O$ given three times a week to the cattle had little beneficial effect, but the dressing of the pasture with copper sulphate at the rate of 30 kg. per hectare produced a marked improvement in the stock.—B. WEITZ.

KEENER, H. A., PERCIVAL, G. P., ELLIS, G. H., & BEESON, K. C. (1950.) **A study of the function of cobalt in the nutrition of sheep.**—*J. Anim. Sci.* **9.** 404-413. [Authors' summary copied *verbatim*.] **1072**

An experiment was carried out with sheep in an attempt to learn more about the role of cobalt in the nutrition of ruminants. Every animal on the cobalt deficient ration developed marked cobalt deficiency symptoms. All animals which received supplemental cobalt remained healthy. At the time of the first treatment, the cobalt supplemented animals had gained approximately seven times as much in weight, were eating five times as much concentrates, six times as much hay, and were drinking twice as much water as the deficient animals. Wool production of the deficient sheep was approximately 62 per cent. that of those receiving cobalt.

It was found that both cobalt sulfate and cobalt carbonate relieved the deficiency when administered orally. When injected intravenously, cobalt sulfate brought about a slow response if given daily or in large enough quantities twice a week. B-complex vitamins, liver extract, certain amino acids, a cobalt-free mineral mixture, fresh rumen liquid, and fresh raw milk were all without value in relieving the deficiency.

HALE, W. H., POPE, A. L., PHILLIPS, P. H., & BOHSTEDT, G. (1950.) **The effect of cobalt on the synthesis of vitamin B_{12} in the rumen of sheep.**—*J. Anim. Sci.* **9.** 414-419. [Authors' summary copied *verbatim*.] **1073**

An assay is described using chicks as the assay animal for determining the relative amounts of vitamin B_{12} in the rumen of cobalt-deficient and cobalt-supplemented sheep.

In 4 chick assays an average difference of 42 gm. growth in 4 weeks was obtained between the rumen ingesta from the cobalt-deficient and the cobalt-supplemented sheep. The rumen ingesta from the cobalt-supplemented sheep gave the larger growth. One assay of the feces from cobalt-supplemented sheep gave 54 gm. more chick growth than did the feces from the cobalt-deficient sheep. The rumen ingesta from the cobalt-supplemented sheep under conditions of this assay contained approximately 60γ of vitamin B_{12} per 100 gm. of dried rumen ingesta.

These data show that vitamin B_{12} production was limited in the rumen of the cobalt-deficient sheep when compared to the production of the vitamin in the rumen of the cobalt-fed sheep. The possible significance of the production of this vitamin in the rumen is discussed.

POPOVICI, A., GESCHICKTER, C. F., REINOVSKY, A., & RUBIN, M. (1950.) **Experimental control of serum calcium levels *in vivo*.**—*Proc. Soc. exp. Biol., N.Y.* 74. 415-417. [Authors' summary copied *verbatim*.] 1074

The ability of ethylenediamine tetra-acetic acid to form undissociated calcium complexes at physiological pH has been utilized as a tool to regulate available serum calcium levels *in vivo*. Further evidence has been presented for the regulatory action of magnesium ion on serum calcium levels.

MEYER, J. H., GRUMMER, R. H., PHILLIPS, R. H., & BOHSTEDT, G. (1950.) **Sodium, chlorine, and potassium requirements of growing pigs.**—*J. Anim. Sci.* 9. 300-306. [Authors' summary modified.] 1075

Sodium, chlorine, and sodium chloride deficiencies were produced in pigs with a resultant decrease in daily gains and in efficiency of feed utilization. The sodium chloride deficiency was no more severe than the sodium deficiency alone.

Plasma studies indicated that the concentration of sodium cannot be used positively to detect a sodium deficiency; the chlorine deficiency caused a significant decrease of chlorides, coincident with the severe sodium deficiency was a significant rise of potassium.

The growth data for the sodium and the balance studies for sodium, chlorine, and potassium suggest that the requirements for growing swine making average daily gains of approximately 1·35 lb. are 36–42 mg. of sodium, 53–64 mg. of chlorine, and 100–120 mg. of potassium per kg. body weight daily.

KACHMAR, J. F., BOYER, P. D., GULLICKSON, T. W., LIEBE, E., & PORTER, R. M. (1950.) **Vitamin E in the nutrition of cattle. II. Vitamin E levels in the blood, vitamin A and carotene utilization, and other chemical studies.**—*J. Nutrit.* 42. 391-403. [Part of authors' summary copied *verbatim*.] 1076

Estimations have been made of the total fat-soluble reducing substances, calculated as α-tocopherol, in the blood plasma of dairy cattle fed rations in which the amount of vitamin E was below that measurable by rat bioassay. Two animals, one which died 20 days later and one with cardiac abnormalities, had calculated tocopherol levels of less than 100 μg.%. Similar measurements for a later group of three unsupplemented animals over a 14-month period gave an average value of 249 μg.%, considerably lower than the value of 685 μg.% found for a corresponding group of animals supplemented with mixed tocopherols, and also lower than values reported in the literature for animals fed normal rations.

Measurements of the blood plasma carotene and vitamin A levels of three supplemented and three unsupplemented animals on controlled carotene and vitamin A intakes showed that the feeding of the low vitamin E ration did not impair the utilization of carotene and vitamin A.

ZACHARIAS, L., GOLDHABER, P., & KINSEY, V. E. (1950.) **Vitamin E deficiency in chicks. I. The effects of dietary supplements on plasma tocopherol levels and vitamin E deficiency symptoms.**—*J. Nutrit.* 42. 359-373. [Authors' summary slightly modified.] 1077

GOLDHABER, P., ZACHARIAS, L., & KINSEY, V. E. (1950.) **Vitamin E deficiency in chicks. II. Plasma xanthophyll levels and vitamin E deficiency symptoms.** — *Ibid.* 453-462. [Authors' summary copied *verbatim*.] 1078

I. A study was made to determine the effects of a water-miscible multiple vitamin preparation, iron, and other substances on the occurrence of vitamin E deficiency symptoms and the plasma tocopherol levels of experimental animals, and to see whether vitamin E-deficient animals developed ocular abnormalities similar to retrolental fibroplasia.

The chief symptom of vitamin E deficiency observed in these experiments was encephalomalacia; cases of exudative diathesis and of

gizzard necrosis were also observed. No ocular abnormalities were found. Deficiency symptoms occurred only when cod liver oil was a constituent of the diet. The plasma tocopherol levels of chicks fed the α-tocopherol-supplemented diets were lowered by the administration of a water-miscible multiple vitamin preparation, cod liver oil, or crystalline vitamin A. Iron supplements, in either the ferric or ferrous form, had no effect.

Chicks with plasma tocopherol levels of approximately 1·0 mg.% or more never developed symptoms. Chicks having plasma tocopherol levels of approximately 0·5 mg.% or less developed symptoms only when fed certain diets. Chicks did not develop symptoms when fed the vitamin E-deficient basal diet supplemented with the multi-vitamin preparation, or when fed the natural diet supplemented with 5% cod liver oil. In both these groups, cod liver oil was present in the diet and the plasma tocopherol levels were as low as those of chicks receiving the vitamin E-deficient basal diet. The absence of symptoms in these two groups indicated that there are substances other than vitamin E present in the natural diet and in the multi-vitamin preparation, which protect chicks from vitamin E-deficiency symptoms. The protective factor in the multi-vitamin preparation was found to be ascorbic acid.

II. Oral supplements of crude xanthophyll prevented the appearance of deficiency symptoms in 23 of 48 chicks raised on the vitamin E-deficient basal diet. This protection is ascribed to the anti-oxidant activity of the xanthophylls. The addition of 20% cod liver oil to the natural diet caused a marked fall in the plasma-xanthophyll level. Vitamin E deficiency symptoms occurred in these animals when the plasma-xanthophyll level had decreased to 0·1 density units, thus indicating a correlation between the destruction of xanthophyll by cod liver oil and the appearance of symptoms. Some unknown factor (probably the unsaturated fatty acids) in cod liver oil, as well as vitamin A, contributes to the destruction of xanthophyll. The protection of xanthophyll by tocopherol occurs only in the gastro-intestinal tract.

Hynek, B. (1948.) Akutní avitaminosy B_1 u kozy, skotu a koně. [**Acute B_1 avitaminoses in goats, cattle and horses.**]—*Čas. československ. Vet.* **3.** 255-258. **1079**

Avitaminosis B_1 in cattle, goats and horses is discussed and the clinical picture in a heifer, two cows and one goat is described. In the heifer, one of the cows and in the goat the condition was caused by a diet consisting almost entirely of sugar beet tops. Cure was effected by intravenous adminisration of vitamin B_1 preparations at various doses according to the species of animal and by yeast given in the drinking water.—E. G .

Luecke, R. W., Culik, R., Thorp, F., Jr., Blakeslee, L. H., & Nelson, R. H. (1950.) **Riboflavin deficiency in the lamb.**—*J. Anim. Sci.* **9.** 420-425. [Authors' summary copied *verbatim*.] **1080**

Three-day old lambs were successfully raised on a liquid purified diet. The lamb, in the pre-ruminant stage, has a definite requirement for riboflavin. Symptoms of riboflavin deficiency were lowered appetite, poor growth and finally pneumonia. Symptoms of riboflavin deficiency were rapidly alleviated with riboflavin administration.

Shaw, J. C. (1950.) **Studies on ketosis in dairy cattle. X. The effect of a vitamin A deficiency.**—*J. Dairy Sci.* **33.** 486-495. [Author's summary copied *verbatim*.] **1081**

Detailed observations were made on 13 cows which were maintained on a low carotene diet for approximately 4 months prepartum and 3 weeks postpartum. The vitamin A depletion of these cows was accentuated by the feeding of a concentrate ration containing 40 per cent soybeans which was later shown to exert a marked depressing action on blood plasma and liver vitamin A. Five of the cows received a vitamin A supplement prepartum which resulted in the birth of four normal-appearing calves. The other eight cows dropped calves which showed marked signs and/or symptoms of a vitamin A deficiency. The blood plasma vitamin A values of these eight cows were extremely low during the postpartal period and one cow exhibited marked symptoms of a vitamin A deficiency. Of the eight cows, four were maintained on a low level of energy intake for 3 weeks postpartum (50 per cent of requirements). The five cows receiving the vitamin A supplement prepartum were on the same low level of energy intake postpartum. In spite of the severe vitamin A depletion and deficiency produced in these cows, none showed symptoms of ketosis and the degree of hypoglycemia produced by partial fasting was as large in the case of the vitamin A-supplemented cows as in the vitamin A-depleted cows. The cows exhibiting a marked vitamin A depletion but receiving higher levels of energy intake postpartum exhibited normal levels of glucose during the postpartal period. None of the cows showed symp-

toms of ketosis. It is concluded that not only is spontaneous ketosis, as it is observed under field conditions, not due to a vitamin A deficiency but that a vitamin A deficiency *per se* does not produce ketosis in dairy cows in the postpartal period.

SAARINEN, P., & SHAW, J. C. (1950.) **Studies on ketosis in dairy cattle. XI. Lipids, minerals and ascorbic acid in the blood of cows with spontaneous ketosis.**—*J. Dairy Sci.* **33.** 496-507. [Authors' summary copied *verbatim.*] **1082**

In a study with 18 cows diagnosed as having ketosis, an analysis was made of various blood and blood plasma substances. Plasma phospholipids and cholesterol ester fractions were somewhat low, particularly in the later stages of ketosis. Free cholesterol in the plasma was relatively normal. The amount of free ether-petroleum ether soluble non-volatile acids in plasma determined by acidometric titration was relatively high in the later stages of ketosis. The neutral fat fraction was relatively low in the early stages of ketosis and normal or high in the later stages.

Marked variations were observed in the plasma ascorbic acid values. The serum phosphatase activity was relatively low. The plasma acid-soluble phosphorus values, both inorganic and organic, were sometimes low but were normal in most cases. Plasma sodium and potassium were normal and the blood chloride values also were in the normal range. Additional data on the effect of fasting and other factors secondary to ketosis are needed before the data can be properly evaluated.

SAARINEN, P., & SHAW, J. C. (1950.) **Studies on ketosis in dairy cattle. XII. Blood lipids, phosphates and phosphatase activity of cows on different levels of feed intake postpartum.**—*J. Dairy Sci.* **33.** 508-514. [Authors' summary copied *verbatim.*] **1083**

To determine whether some of the alterations previously observed in the blood lipids and phosphatase values of cows with ketosis are due to ketosis *per se* or secondarily to the inanition associated with ketosis, 16 cows were used in a study of the effect of different levels of protein and energy intake postpartum. The postpartal plasma lipid values of cows receiving 70 to 80 per cent of their total digestible nutrient requirements were similar to those of cows in the early stages of ketosis. The postpartal plasma lipid values of cows receiving only 35 per cent of their total digestible nutrient requirements were similar to those of cows in the later stages of ketosis. Complete fasting for 8 days produced alterations of the same nature but of greater magnitude.

SAARINEN, P., & SHAW, J. C. (1950.) **Studies on ketosis in dairy cattle. XIII. Lipids and ascorbic acid in the liver and adrenals of cows with spontaneous and fasting ketosis.**—*J. Dairy Sci.* **33.** 515-525. [Authors' conclusions slightly modified.] **1084**

Liver lipids were determined on 12 cows with spontaneous ketosis, 24 normal cows on various levels of protein and energy intake postpartum and on two normal cows in mid-lactation. Similar studies were made on the adrenals of nine cows with ketosis, two normal cows which were partially fasted postpartum, one normal cow which was fasted completely for 8 days postpartum and one normal cow in mid-lactation.

The results show that, contrary to general belief, the fat content of the liver often presents normal postpartal values in the early stages of ketosis. The fatty liver appears in the later stages of ketosis. This effect was reproduced by fasting postpartum and indicates that the fatty liver associated with spontaneous ketosis is due for the most part to inanition. The total cholesterol, and especially the ester cholesterol fraction followed the same pattern. It is concluded that a fatty liver is not a predisposing factor in the development of most cases of spontaneous ketosis.

In postpartum-fasted cows which received a low protein ration, both before and after parturition, the liver had a higher fat content than that in cows on a high protein ration.

The high fat content of the adrenal glands of ketotic cows also was reproduced by fasting. The free cholesterol increased and the ester cholesterol decreased in both fasting and spontanous ketosis, which is opposite to the change observed in the liver.

Some of the ascorbic acid values of both the liver and adrenal glands of cows with ketosis were somewhat low. This also was reproduced by fasting.

The flabbiness of the adrenal glands observed in ketotic cows was not reproduced by fasting and could not be explained on the basis of the water or fat content of these glands.

ABELL, M. R., BEVERIDGE, J. M. R., & FISHER, J. H. (1950.) **Hepatic necrosis induced by dietary means. I. Structural changes occurring in the liver during the development of necrosis.**—*Arch. Path.* **50.** 1-22. [Authors' summary copied *verbatim.*] **1085**

ABELL, M. R., & BEVERIDGE, J. M. R. (1950.) **Hepatic necrosis induced by dietary means. II. Biochemical changes occurring in the liver during the development of necrosis.** —*Ibid.* 23-25. [Part of authors' summary copied *verbatim*.] **1086**

I. One hundred and twenty-one male rats which were fed a diet low in protein (7·2 per cent yeast protein) and deficient in alpha tocopherol were killed at intervals throughout an experimental period of 92 days. This diet was known to be capable of producing a high incidence of liver necrosis. The cytologic changes which occurred prior to and at the time of necrosis were studied by means of sections stained with hematoxylin and eosin, scarlet red, Best's carmine and Masson's trichrome stains.

During the prenecrotic period, the livers showed a prominent loss of cytoplasm and a decrease of basophilic granules. There was a progressive increase of stainable lipid in the liver cells about the central veins. Glycogen stains revealed little or no change except in sections where the central areas showed a marked increase of lipid. In such areas there was a decrease of stainable glycogen granules.

The livers which presented evidence of necrosis were divided on the basis of gross and microscopic observations into those showing massive necrosis, submassive and recurrent submassive necrosis, and postnecrotic scarring. These findings have been described in detail. Sections of the necrotic livers stained for fat yielded microscopic pictures so variable that no conclusions of a general nature could be formulated. As might be expected, the necrotic cells were devoid of glycogen.

II. During the prenecrotic period there was an initial and proportional fall in both dry and wet liver weight. Total lipids, neutral fat, total fatty acids and cholesteryl esters showed a progressive increase during this period but no additional significant change at the time of necrosis. Glycogen and phospholipid levels remained unchanged in all non-necrotic livers.

The massively necrotic livers differed from the non-necrotic that were obtained from animals killed during the same interval by a significant increase in both wet and dry liver weight, striking increases in water and free cholesterol and equally striking decreases in phospholipid and glycogen levels. With the exception of the phospholipid component, which was essentially unchanged, the foregoing statement is also applicable to livers showing submassive necrosis.

BONFILS, S., & LAMBLING, A. (1949.) Etudes des troubles du métabolisme des hydrates de carbon au cours des diarrhées chroniques dites banales. **[Disorders in carbohydrate metabolism and chronic diarrhoea.]**—*Acta med. scand.* **136.** 79-96. [In French: English summary. Abst. from English summary.] **1087**

Carbohydrate metabolism was studied in cases of chronic diarrhoeas of the usual type in human patients. Titration of hyperglycemia induced by oral and intravenous administration of glucose, titration of pyruvic acid in blood and direct measurement of the absorption of glucose through the intestine were made in all cases. No difficulty in absorption of glucose or lipids through the intestine could be demonstrated, even in cases of low hyperglycemic response (62·5%). A survey of the metabolism of vitamin A and of the effects of folic acid confirms that the metabolic disturbances recorded in chronic diarrhoeas and idiopathic steatorrhea are not identical. Chronic diarrhoeas may be divided into two groups: (1) one with small hyperglycemic response to glucose; low level of pyruvic acid in blood and hypoglycemia following the intake of folic acid; (2) the other with normal or high hyperglycemia response to glucose, high level of pyruvic acid in blood, no hypoglycemic response to folic acid.

It is suggested that some endocrine disturbance underlies the preceding conditions bearing mainly on the secretion of insulin.

See also abstr. 983 (fungistatic activity of vitamin K); 994 (vitamin B_{12}); 995 (folic acid).

DISEASES, GENERAL

LOVELL, R. (1950.) **The recognition of subsidiary factors in the aetiology of infective diseases. President's address.**—*Proc. R. Soc. Med.* **43.** 1-10. **1088**

L. discussed a selection of the relevant literature under three headings, (I) the bacterial flora of normal healthy human beings and animals and the mechanism whereby the potential pathogens assume an infective role; (II) the resistance of individuals as far as we are able to judge by examination of body fluids for antibodies and bactericidal substances; and (III) the different environmental and subsidiary factors which initiate diseases and break down

any natural immunity. He emphasized the difficulties of estimating the carrier rate of pathogenic bacteria in man and animals. Many pathogens can be recovered from the tissues of clinically normal subjects. In some cases all the members of a community may acquire, by natural means, a degree of resistance to a specific bacterium or its toxin. In other cases, especially when the serological test employed is the agglutination reaction, the presence of antibodies bears no relation to the carrier rate. The factors that convert potential pathogens to "epidemic strains" are unknown, although the increase in virulence may be associated with a reduction in the resistance of an individual host.

Thus a recognition of those factors that contribute to decreased host resistance is called for. There is some evidence that there are similar considerations in the case of bacteria that are relatively harmless to the adult but assume a pathogenic role in the young. The term "nutritional status" is not sufficiently exact to explain a lowering of resistance, and indeed in the case of some infections an animal in a good state of health appears to be more prone than one in a poorer state.

—Alastair N. Worden.

Andreev, K. P. (1949.) **[The eradication of disease.]**—*Veterinariya, Moscow.* **26.** No. 9. pp. 12-14. **1089**

The suggestion is put forward that diseases should be eradicated completely by wholesale attack, both territorially and by the appropriate means based on their nature, medically, and not merely held in check. The plan is based on increasing the animal's resistance to disease, eliminating infections and infestations and altering conditions in a manner most suitable to maintaining health. Veterinary research and training establishments are to direct the policy and take an active part. In terms of time it is proposed to start with the chief farms during the first 1–2 years and then expand the areas until the whole country is embraced.

Viruses are first on the list and diseases mentioned are (1) F. & M. disease, which should be stamped out in 3–5 years; (2) sheep pox, against which Likhachev's vaccine is recommended; (3) swine fever, which could be stamped out in 2–3 years; and (4) rabies, to be eradicated by destroying homeless dogs, immunizing the rest and exterminating wolves. Control of other infections and infestations will then be dealt with.

Practical measures to be adopted in order to supplement existing reguations regarding animal health are proper feeding, large-scale immunization, the use of systematic diagnostic tests, the establishment of isolation centres, the use of quarantine, disinfection of pastures, water and farm premises, improvement in stabling and byres and, overall, a realistic conformity with modern demands of enlightened management and hygiene.—F. A. A.

Bossi, V. (1948.) Breve contributo alla conoscenza dell'oftalmia periodica. **[Periodic ophthalmia in horses.]**—*Rev. Fac. Agron. Vet., B. Aires.* **12.** 8-25. **1090**

B. considered that the principal predisposing factors are regional and hereditary influences.

One of B.'s assistants, Tagliavini, considered that a congenital, latent hypothyroidism is responsible for the clinical picture of equine periodic ophthalmia whenever activated by environmental or other influences, such as climate, muscular activity and certain nutritional factors. This theory was inapplicable to the incidence of the disease in older horses.

Morbid anatomy is presented at some length and systematically for the various structures of the eye.

The treatment of affected horses was discussed.—G. P. Marshall.

Cheyre, P. (1949.) Coexistence des syndromes immobilité et ictère chez le cheval. **[Coexistence of syndromes of somnolence and icterus in the horse (*Senecio* poisoning?)]**—*Bull. Soc. Sci. vét. Lyon.* **51.** 62-66. **1091**

Case records of an aged gelding and a two-year-old stallion afflicted with symptoms of intermittent sleepiness are presented. The gelding also had periods of excitement; the younger animal had had an earlier attack of colic. Both animals were slaughtered as incurable. P.M. examination revealed marked jaundice of all tissues, including the subcutaneous, and some cirrhosis of the liver. In the case of the stallion the appearance of the liver was further complicated by the presence of a large abscess. The lungs showed patches of pneumonia: there were no macroscopic brain lesions. Bacteriological examinations were not conclusive.—R. N. Smith.

Minett, F. C. (1949.) **Panting in cattle—a sequel to foot-and-mouth disease. I. Experimental observations and pathology.**—*Amer. J. vet. Res.* **10.** 40-48. **1092**

M. gave a general account of this condition, observed in India as a sequel to F. & M. disease [see *V.B.* **20.** 139].

"Panting" cattle had rough coats and were generally unthrifty; increased body temperature and pulse rate, dyspnoea and anaemia were observed. The outstanding pathological feature was a reduction in size of the thyroid gland. M. considered that this type of panting is caused by overactivity of the thyroid gland and permanent damage to the heat regulatory system. —E. EDEN.

STEWART, C. M. (1950.) **Panting in cattle.** [Correspondence.]—*Vet. Rec.* **62.** 280-281. **1093**

S. considers this "panting of cattle" to be a fairly common condition in India and not a sequel to F. & M. disease as suggested by Minett. It occurs in cattle of imported breeds which are unable to withstand the hot climate and high humidity.—E. EDEN.

MINETT, F. C. (1950.) **Panting in cattle.** [Correspondence.]—*Vet. Rec.* **62.** 309. **1094**

M. replies to Stewart (see preceding abst.) that in his paper "panting" referred to a special syndrome observed in cattle in India that have previously had F. & M. disease. —E. EDEN.

STEWART, C. M. (1950.) **Panting in cattle.** [Correspondence.]—*Vet. Rec.* **62.** 339-340. **1095**

S. agrees that Minett and he have been discussing two different clinical conditions. S. advocates the breeding of animals which are more adapted to the humid, hot climate of India.—E. EDEN.

BROWNLEE, A. (1950.) **Panting in cattle.** [Correspondence.]—*Vet. Rec.* **62.** 340. **1096**

B. describes panting which occurred in a herd of Shorthorn heifers during a hot summer in England.—E. EDEN.

STEWART, C. M. (1950.) **Panting in cattle and dry coat in horses.** [Correspondence.] —*Vet Rec.* **62.** 350. **1097**

S. considers that panting in cattle and dry coat in horses are similar conditions. Since horses are not susceptible to F. & M. disease S. is of opinion that panting in cattle cannot be a sequel to F. & M. disease.—E. EDEN.

DAUBNEY, R. (1950.) **Panting in cattle.** [Correspondence.]—*Vet. Rec.* **62.** 375-376. **1098**

D. described three conditions which lead to panting in cattle in tropical countries. These are (a) failure of the heat regulating mechanism under conditions of high environmental temperature, (b) a degeneration of physical condition in European breeds occurring after several generations in the tropics, and (c) as a sequel to foot and mouth disease resulting from endocrine damage.—K. G. TOWERS.

ARNOLD, T. F. (1950.) **Panting in cattle and non-sweating in horses.** [Correspondence.] —*Vec. Rec.* **62.** 463. **1099**

"Panting" in cattle and "non-sweating" [dry-coat] in horses are compared. A. considers that 'non-sweating" in horses is preceded by an excessive water loss due to prolonged and profuse perspiration. The remedies recommended are mainly directed to reduction of the metabolic rate and the water loss and to aid heat dissipation.—E. EDEN.

SUTHERLAND, A. K. (1950.) **Diseases of calves.**—*Aust. vet. J.* **26.** 238-247: Discussion pp. 247-248. [Part of author's summary copied *verbatim*.] **1100**

Observations on certain diseases of young dairy calves in Queensland are presented. Calf scours is common in calves three weeks to two months of age. Several syndromes occur, but they have not been differentiated.

It is assumed for disease control purposes that scours is an infectious disease in which feeding and management practices that lower the host's resistance are important.

Four outbreaks of *Salmonella typhimurium* infection and one of *S. orientalis* infection have been reported in calves in Queensland.

Pneumonia in calves one to five months of age is prevalent. Sulphapyridine treatment has been effective and prevention is achieved by segregating calves in small groups.

Calf diphtheria is not common but serious outbreaks occur occasionally.

Lead poisoning caused by the ingestion of paint or paint ingredients sometimes presents atypical symptoms and lesions so that chemical analyses of liver and kidney may be necessary for definite diagnosis. Cases on four farms are described.

Leptospirosis occurs in most of the dairying districts of Queenland. Twenty-four outbreaks were recorded in the previous 18 months, although only thirteen of them were confirmed by laboratory examinations. The symptoms, post-mortem findings, diagnosis, control and treatment are discussed briefly.

Laboratory procedures for demonstrating leptospira sometimes give negative results on tissues known to be infected. Microscopic examination of urine containing 0·5 *per cent.* formalin is simple and reliable but leptospirae

are usually not excreted in the urine until the acute febrile reaction is past or declining.

FARLEY, H., FOOTE, L. E., PEARSON, C. C., BROCK, W. E., & KLIEWER, I. O. (1950.) **Infectious keratitis ("Pinkeye") in cattle.**—*Bull. Okla. agric. Exp. Sta.* No. B. 354. pp. 15. [Authors' summary copied *verbatim.*] **1101**

Keratitis or "pinkeye" has been recognized as an infectious disease in cattle for at least 70 years. The cause of the disease has not been definitely established. It has been found by cross-infection studies that cattle cannot be infected with sheep keratitis and that sheep cannot be caused to develop keratitis of cattle origin.

Keratitis is known to exist in three forms—(1) mild, (2) acute, and (3) chronic. The pathological lesions depend upon the type of infection present. Keratitis is readily transmitted from diseased to susceptible cattle when in close contact under range and barn lot conditions. Thirty-four head of cattle were used in an experiment to determine the part that *Hemophilus bovis* has in keratitis infection. All exposed cattle remained free from keratitis infection. Later when these animals were exposed with infected eye secretions from field cases, eight head developed typical cases of the disease.

Hemophilus bovis, Staphylococcus aureus, St. albus, Escherichia coli, and occasionally streptococci are isolated from cattle affected with the disease.

VAN BOGAERT, L., & INNES, J. R. M. (1950.) **Cerebellar disorders in lambs. A study in animal neuropathology with some comments on ovine neuroanatomy.**—*Arch. Path.* **50.** 36-62. [Authors' summary copied *verbatim.*] **1102**

Brief comments with illustrations are made on normal ovine neuro-anatomy with particular reference to the cerebellum.

A disease of newborn lambs (of different breeds) with signs of incoordination and hypotonia was identified as occurring in Britain, where affected animals are known in local regions as "daft lambs".

The primary lesions were restricted to the cerebellum and consisted essentially in swelling, vacuolation and lysis of the Purkinje cells and, to a less extent, the Golgi cells; glial reaction, initiated in the granular and Bergmann layer, was a consequent feature; corresponding neuronal and glial changes were present in many cases in the dentate and roof nuclei. The condition was concluded to be a form of cortical cerebellar atrophy, and some evidence was given to show that it was inherited.

An identical cerebellar condition was later established to occur in Corriedale lambs in Canada; more data were available to indicate that the disease was inherited and due to a recessive gene.

The causal genesis is conjectural; it was suggested that it might be a metabolic, or toxic, disorder of cerebellar neurons occurring at a time in fetal development of the lamb when migration of Purkinje cells was nearly complete.

Other "paralytic entities" have been confused clinically with "daft lambs", and 2 such cases are described: (a) angiomatosis with cerebellar atrophy and (b) a peculiar meningoencephalitis of the mesencephalon of uncertain etiologic origin.

A case of true progressive cortical cerebellar atrophy, or abiotrophy, in a lamb is described.

KHACHATRYAN, A. B. (1949.) **[Infection in kids resembling infective hepatitis.]**—*Veterinariya, Moscow.* **26.** No. 9. pp. 33-34. **1103**

From 1945 onwards up to 35–45% of deaths occurred among kids 5–30 days old with symptoms resembling infective hepatitis. Lambs running with them remained unaffected. An organism resembling *Salmonella columbensis* but with some characteristic differences, was isolated from affected animals.

Kids, lambs and laboratory animals were then inoculated. Mice reacted, dying in 3–4 days. The five 20–30-day-old lambs used suffered malaise, a temperature reaction, unsteady gait, congested nasal mucosa and a nasal discharge; they all recovered, however, after 10–15 days. Of the ten 15–45-day-old kids nine dosed subcutaneously reacted severely and died within about a week, with acute liver disease and lesions in other parenchymatous organs. One dosed *per os* also died. *S. columbensis* was isolated in culture from tissues of the experimental animals.—F. A. A.

PATERSON, J. C., SLINGER, S. J., & GARTLEY, K. M. (1948.) **Experimental coronary sclerosis. I. Medial degeneration as the primary lesion in coronary sclerosis of cockerels.**—*Arch. Path.* **45.** 306-318. [Authors' summary slightly modified.] **1104**

A high incidence of spontaneous arteriosclerosis of the coronary arteries, greater than that observed in the aorta, has been found in males of two breeds of fowls. Serial sections have shown that the primary lesion of these arteries is a focus of hydropic degeneration of

the medial coat. The possible causes of the primary lesion are discussed, and it is suggested that the lesion may be infectious in origin.

The feeding of dry cholesterol to the birds in these experiments produced changes in the coronary arteries that were purely secondary. Lipoid material was laid down at points of pre-existent spontaneous disease, and it accelerated the arteriosclerotic process, especially in the intima, and resulted in the formation of stenosing plaques of the atherosclerotic type.

PATERSON, J. C., MITCHELL, C. A., & WALLACE, A. C. (1949.) **Experimental coronary sclerosis. II. The role of infection in coronary sclerosis of cockerels.**—*Arch. Path.* **47.** 335-339. [Authors' summary and conclusions copied *verbatim*.] **1105**

White leghorn cockerels which had been quarantined against infectious disease until they were 7 months old failed to show any reduction of the incidence of coronary sclerosis as compared with that observed in control cockerels which had been reared under natural conditions. The intravenous injection of staphylococci of a strain virulent to chickens, and of staphylococcic toxin failed to produce arterial lesions or to accelerate those of the spontaneous variety. The experimental findings suggest that infectious disease of an acquired type is probably not responsible for the medial lesions which initiate coronary sclerosis in white leghorn cockerels.

PATERSON, J. C., & COTTRAL, G. E. (1950.) **Experimental coronary sclerosis. III. Lymphomatosis as a cause of coronary sclerosis in chickens.**—*Arch. Path.* **49.** 669-709. [Authors' summary copied *verbatim*.] **1106**

Single comb, white leghorn chickens of a line which had been rendered relatively free from lymphomatosis by isolation and selective breeding have been exposed to infection with virulent lymphomatous material, and the effect of this procedure on the number and the size of lesions of the coronary arteries has been compared with that in noninfected birds of the same line. A sixfold increase of the number of arterial lesions and a marked acceleration of the size of individual lesions were found in the infected birds as compared with the controls. From the evidence at hand it appears that these arterial lesions, considered in the past to be manifestations of arteriosclerosis, may be merely a part of the disease process of lymphomatosis. Because lymphomatosis is a condition peculiar to the avian family, these findings and conclusions have no apparent direct applicaton to the etiology of human arteriosclerosis.

SALFELDER, K. (1950.) Panarteriitis bei einem Hund. **[Panarteritis in a dog.]**—*Dtsch. tierärztl. Wschr.* **57.** 117-119. **1107**

A brief account of the lesions in a case of panarteritis in a dog.—L. M. MARKSON.

DRIEUX, H., JOUVE, F., THIÉRY, G., & DUMONT, L. (1950.) Périartérite noueuse chez une vache. **[Periarteritis nodosa in a cow.]**—*Rec. Méd vét.* **126.** 193-202. **1108**

The subject was a three-year-old heifer, bred and reared by the owner. Its clinical history had been negative and its physical condition excellent, until suddenly there appeared and persisted for several months various symptoms collectively unrelated to any known recognizable disease. As treatment was unsuccessful, the animal was slaughtered.

There were extensive lesions of the disease in the subcutis of the dewlap, breast and abdominal wall. Nodular lesions were widespread in the voluntary muscles except those of the tongue and larynx. The viscera were not extensively involved: the disease had affected the liver to some extent and nodules were particularly numerous in the heart, especially in the right ventricle. There were no lesions in the brain or its meninges to account for the nervous symptoms.

[Markson gave an account of the literature and described the lesions, see *V.B.* **18.** 83.]

—L. M. MARKSON.

PAINE, R., BUTCHER, H. R., SMITH, J. R., & HOWARD, F. A. (1950.) **Observations on the role of pulmonary congestion in the production of edema of the lungs.**—*J. Lab. clin. Med.* **36.** 288-296. [Authors' summary copied *verbatim*.] **1109**

Critical restriction of left ventricular output by mechanical obstruction of the aorta and its principal branches leads to pulmonary congestion and edema, as indicated by the familiar studies of Welch [(1878)]. Mechanisms of lung edema formation under these conditions were reinvestigated in animals with intact circulation and in heart-lung preparations. It was found in both types of experiment that ligation of the aorta, *distal* to the great vessels to the head and upper extremities, did not curtail function of the left ventricle if blood could be discharged freely into the first branches of the aorta.. Further restriction of outflow by obstruction of these large aortic branches caused left ven-

tricular failure. It was noted in the heart-lung preparation that high "arterial" pressures were engendered by the aortic cannula and artificial peripheral resistance, frequently leading to left ventricular failure. It was further shown that the failure of the left ventricle provoked engorgement and edema of the lungs if high pulmonary vascular pressures were created by continuing right ventricular competence.

Pulmonary lymphatic outflows and pressures were studied under the conditions of normal and elevated systemic venous tension by mechanical obstruction of the superior vena cava. If a *terminal* lymphatic vessel was cannulated, a sustained high lymph pressure was recorded; if one of a number of collateral lymphatics (coursing to their emptying points in the venous system) was cannulated, pressure in the lymphatic system was elevated during the rise of superior caval pressure. The evidence therefore indicates that elevation of systemic venous pressure may offer material obstruction to the escape of lymph from the lungs.

MacKay, E. M., & Pecka, E. F., Jr. (1950.) **Experimental pulmonary edema. III. Hypoglycemia, a cause of the pulmonary edema.**—*Proc. Soc. exp. Biol., N.Y.* **73.** 568-569. [Authors' summary copied *verbatim.*] **1110**

Albino rats of the Slonaker Strain when kept in a state of hypoglycemia by insulin injections for a period of some hours invariably develop a fatal pulmonary edema. Adrenalectomy and adrenal demedullation reduce the degree of edema but fail to prevent it. Adequate doses of the adrenergic blocking agent, N-(9-fluorenyl)-N-ethyl-β-chlorethylamine-HCl, prevent this hypoglycemia lung edema entirely. It is suggested that this type of pulmonary edema is neurogenic in origin due to the influence of glucose lack on the nerve centers where the vasomotor fibers to the lungs and heart originate.

Waldstein, S. S., & Szanto, P. B. (1950.) **Accuracy of sampling by needle biopsy in diffuse liver disease.**—*Arch. Path.* **50.** 326-328. [Authors' summary copied *verbatim.*] **1111**

To investigate how well the single, small needle sample represents diffuse hepatic disease, 10 needle specimens were taken from different parts of each of 15 cadaver livers and were compared with respect to several pathologic features frequently used in the interpretation of such specimens.

Injury of the epithelial liver cells and fatty metamorphosis were almost always uniform throughout the liver. Alteration of the lobular pattern, scarring and inflammatory changes showed significant dissimilarity in the amount of alteration in about 10 per cent of the specimens studied.

Kite, O. W., Shaw, J. H., & Sognnaes, R. F. (1950.) **The prevention of experimental tooth decay by tube-feeding.**—*J. Nutrit.* **42.** 89-105. [Authors' summary copied *verbatim.*] **1112**

When intact or desalivated caries-susceptible albino rats were fed adequate amounts of a caries-producing diet by stomach tube they did not develop tooth decay. In contrast, all but one of the intact litter mates and all of the desalivated litter mates which consumed the same diet orally had dental caries. The critical ratios of the differences between the control and experimental groups ranged from 5·7 to 26·6, which indicated that the differences were highly significant.

Histologic examination showed that the molar teeth of both groups were surrounded by a great abundance of microorganisms. In the controls, the microorganisms were in direct contact with the tooth surfaces; in tube-fed rats they were separated from the enamel surfaces by a thick organic membrane (possibly remnants of Nasmyth's membrane) and by foreign matter which was firmly impacted in the fissures.

The results of this experiment suggest that, with all other factors being controlled and equal, tooth decay is prevented in caries-susceptible rats when the direct effects of food in the oral cavity are eliminated.

See also abstr. **1013** (distemper-like diseases); **1015** (parotitis); **1085-1086** (liver necrosis induced by diet); **1087** (chronic diarrhoea caused by metabolic disorders); **1124** (skin affections caused by streptomycin); **1140** (cannibalism); **1149** (ACTH in rheumatoid disease in swine); **1242** (book, sheep diseases).

POISONS AND POISONING

Shiels, D. O. (1950.) **Influence of lead absorption on the ratio of large to small lymphoid cells.**—*Med. J. Aust.* Aug. 5th. 205-211. [Authors' summary copied *verbatim.*] **1113**

The results of determinations of the ratio of monocytes *plus* large lymphocytes to small lymphocytes in a series of over 400 persons employed in various lead trades have been discussed. Absorption of lead causes an increase

in this ratio of monocytes *plus* large lymphocytes to small lymphocytes. In cases of lead poisoning this ratio falls again to within the range of the ratio for non-exposed persons. If the ratio falls to less than 2·0, lead poisoning is imminent, if not already present. Recovery from lead poisoning is accompanied by a rise in the ratio to above 2·0 in the early stages. In the later stages of recovery the ratio again falls to the range of ratios of non-exposed persons. In the cases of new workers there is a direct correlation between the cell ratio and the urinary lead concentrations as exposure increases.

The value of the cell ratio is a valuable guide to the prevention and diagnosis of lead poisoning.

DE LANGEN, C. D., & TEN BERG, J. A. G. (1948.) **Porphyrin in the urine as a first symptom of lead poisoning.**—*Acta med. scand.* **130.** 37-44. [In English. Authors' summary slightly modified.] **1114**

A description is given of a simple semi-quantitative method of estimating porphyrin in the urine. Based on details obtained in an extensive investigation of symptoms of lead poisoning in the population of a district where the water had a high lead content this method appeared to be more reliable and to provide a more constant diagnostic test for detecting the first signs of lead-poisoning than the basophile granulation of the erythrocytes. This was proved (1) by a comparative examination of both criteria with 87 persons who all had a more or less high porphyrin-excretion due to lead and (2) by an experimental examination of normal persons taking predetermined quantities of lead. The method is recommended for the examination of large groups of persons who are regularly exposed to contact with lead, such as workmen in some industries, etc.

BOHOSIEWICZ, M. (1949.) Z pracowni toksykologicznej. **[Poisoning in fowls.]**—*Med. Weteryn.* **5.** 367-368. [Abst. from English summary.] **1115**

An account of poisoning of fowls with arsenic, with zinc phosphide and with acetylene on different occasions.

STUDER, R. (1948.) Ein Fall akuter Jauchegasvergiftung eines Pferdes. **[A case of acute sewer gas poisoning in a horse.]**—*Schweiz. Arch. Tierheilk.* **90.** 157-159. **1116**

Faulty ventilation combined with the lay-out of the farm buildings were the cause of a sufficient accumulation of sewer gas, from the drainings from the stable, to cause the death of the horse in the stall nearest the source of gas and illness in two others. [See also *V.B.* **18.** 212].—R. MARSHALL.

JOLLY, D. W., & KANE, G. J. (1950.) **Studies in the toxicity of benzene hexachloride.**—*Vet. Rec.* **62.** 377-379. [Abst. from authors' summary.] **1117**

A wettable powder containing 50% benzene hexachloride, (BHC), suspended in water, was administered by stomach tube to 12 sheep, at dosage levels of 0·05–3 g. per kg. body weight. Toxic symptoms were observed at a dose of 0·25 g. per kg., and sheep receiving 0·5 g. per kg. and over died. To assess the hazards of skin absorption involved, 250 sheep were dipped in 2% BHC dip wash, and a 5% BHC spray was applied to others. No toxic symptoms were observed.

Six dogs were given BHC alone in capsule form, in doses from 0·3–1 g. per kg. A toxic reaction occurred in one out of two dogs given 0·3 g. per kg., and in every case where a larger dose was administered, but all the dogs recovered. Tests for skin absorption in four dogs using 15 g. of 5% BHC paste applied to a scarified area over the ribs resulted in a transient irritation of the skin, but no systemic reaction occurred.

P.M. examination of six sheep and four dogs revealed patches of congestion in the stomach and intestines, congestion of the kidneys, and in the sheep, petechial haemorrhages in the heart and oedema of the brain. It is concluded that in view of the low concentration of BHC required to control ectoparasites, the chances of the occurrence of a toxic reaction in practice are remote.

JONES, L. M., SMITH, D. A., & SMITH, H. A. (1949.) **Alpha-naphthyl thiourea (ANTU) poisoning in dogs.**—*Amer. J. vet. Res.* **10.** 160-167. **1118**

Alpha-naphthyl thiourea (ANTU) used as a rat poison has also caused poisoning in dogs. The symptoms in dogs are peracute, acute, or subacute. Onset of symptoms is characterised by vomition, the vomitus including gastric ingesta, frothy mucus which may be streaked with blood and containing small cast-like shreds of mucous membrane; the breathing becomes rapid with short, jerky inspirations that do not fill the lungs. Expiration is accompanied by a shallow, hacking cough. The legs, ears, nose, lips, and gums are cold to the touch. The mucous membrances of the mouth, tongue, and conjunctivae are cyanotic and anaemic. As the condition progresses, the peripheral pulse be-

comes imperceptible. Severe pain is evidenced by whines when the animal is palpated over the gastric area. The temperatures are subnormal in dogs which will eventually die. Death occurs usually in 2–4 hours after symptoms appear. Mature and old dogs are more susceptible to the toxic effects of ANTU than immature ones. The fatal dose for dogs of 5–10 months of age was between 85–100 mg. per kg. body weight. For dogs of from 2–14 years of age the fatal dose approached 30 mg. per kg. Tolerance to the acute poisonous effects of ANTU was readily developed in immature dogs by oral administration of the drug but they were susceptible when the drug was injected intravenously or intraperitoneally. Pulmonary oedema and excessive hydrothorax were the immediate causes of death in dogs poisoned orally. The use of the thiourea test reagent of Grote to identify ANTU in biological samples has disadvantages. A positive test would indicate that ANTU is present because of the improbability of finding other thiourea type compounds.—C. Horton Smith.

Ely, J. O., & Ross, M. H. (1950.) **Effect of adenine on rats.**—*Arch. Path.* **50.** 359-365. [Authors' summary copied *verbatim*.] 1119

Adenine was fed at various levels to rats for different periods. A dietary level of 0·17 per cent. adenine caused some enlargement of the kidneys and reduction of the size of the liver and the thymus. The maximum level that had no influence on growth was 0·33 per cent. of the diet (261 mg. per kilogram of rat weight per day). Higher levels reduced growth in addition to causing enlargement of the kidneys and reduction of the size of the liver and the thymus.

Crystalline deposits, probably uric acid, were observed in renal tubules of the rats which had been fed adenine. The amount of alkaline phosphatase in the proximal convoluted tubules of the kidney was greatly reduced as a result of adenine feeding, and thymic involution occurred.

Doses of adenylic acid corresponding in adenine content to the doses of adenine that caused great enlargement of the kidneys, involution of the thymus and decrease of the size of the liver failed to elicit any of these effects.

Le Poncin, M. (1945.) Intoxications par quelques cucurbitacées chez les animaux. [**Poisoning of livestock by** *Cucurbitaceae*].—*Thesis, Alfort.* pp. 50. 1120

A review of the literature on poisoning of various domestic animals and birds by species of *Cucurbitaceae*. No original observations were made, but some hitherto unpublished case reports from Alfort are included. The following plants have been incriminated in man and animals: *Cucumis myriocarpus, C. africanus, C. leptodermis, C. species, Ecballium elaterium, E. alba, Citrullus colocynthis, Bryonia dioica B. alba, Melothria punctata, Cucurbita maxima.*

The hitherto unpublished records include those of *Cucurbita maxima* poisoning in birds. In geese and ducks, following the ingestion of seed, the initial sympton noted was a mild diarrhoea, which did not persist for long but was followed by a progressive locomotor incoordination, culminating in death.

—Alastair N. Worden.

Crowley, P. (1949.) **Water dropwort (*Oenanthe crocata*) poisoning in cattle.**—*J. Dep. Agric., Eire.* **46.** pp. 27-28. 1121

The roots of these plants were uprooted by river flooding and carried on to pasture where they were eaten by cattle and caused several deaths.—R. Marshall.

Anon. (1950.) **Investigations into the etiology and control of enzootic (toxaemic) jaundice of sheep. Report of the Investigation committee for the year 1949/50.**—*Aust. vet. J.* 26. 229-232. 1122

This report emphasizes that the investigation of enzootic (toxaemic) jaundice has resolved into a study of heliotrope poisoning and chronic copper poisoning of sheep.

Field experiments on the effects of grazing heliotrope have shown that Merino sheep are just as susceptible as other breeds. A single exposure to this plant may affect carbohydrate metabolism, and a supplement of molybdenum may intensify the ill-effects of the consumption of heliotrope. Progress has been made in the study of the alkaloids of *H. europaeum*.

Chronic copper poisoning occurs most frequently in sheep grazing pastures dominated by subterranean clover and a diagnosis is usually not very difficult to establish. However, at times, the previous consumption of heliotrope obscures the picture. Experimental studies on the effect of increasing the acidity of the soil on the copper storage of grazing sheep have been commenced. In sheep on a constant copper intake of 9 mg. per day there was a progressive reduction in the amount of copper stored when given progressively larger amounts of molybdenum up to 20 mg. per day. A further increase in the amount of molybdenum given per day did not enhance the limiting effect on copper storage.

Natural outbreaks of enzootic jaundice are

being recorded more frequently in the central western districts of New South Wales.

—J. D. STEEL.

CARPENTER, K. J., PHILLIPSON, A. T., & THOMSON, W. (1950.) **Experiments with dried bracken** (*Pteris aquilina*).—*Brit. vet. J.* **106**. 292-308. [Authors' summary slightly modified.] **1123**

Bracken cut in June, after chopping in a silage cutter and drying in a grass drier, contained a factor that induces vitamin B_1 deficiency in rats and ponies. Both Aberdeenshire and Galashiels bracken contained this factor, although bracken poisoning has not been recorded in the Aberdeenshire area.

Rats fed 40 per cent dried bracken did not gain weight normally and some ultimately died. Treatment with vitamin B_1 allowed normal growth rates to occur. The growth rate in one group of rats fed Aberdeenshire bracken after an initial depression later returned to normal without administration of vitamin B_1. Other B vitamins do not correct the deficiency.

Two ponies fed dried bracken and hay developed on three occasions a condition that was characterised by incoordination of movement, bradycardia and irregularities of the heart beat. Treatment with vitamin B_1 by subcutaneous injection cured the condition. Administration of vitiman B_1 in a gelatin capsule by mouth was less effective.

One of two heifers eating dried bracken and hay developed a condition similar to bracken poisoning. Injection of vitamin B_1 did not cure the animal and it died. The post-mortem picture was consistent with that described for bracken poisoning and no pathogenic organisms which could account for death were isolated from the carcase. The other heifer remained in apparently good health although ultimately consuming more bracken daily than the one that died.

HADENGUE, A. (1949.) Les dermites professionnelles dues à la streptomycine. **[Occupational skin affections due to streptomycin.]** —*Arch. Malad. Professionnelles*. **10**. 250-253. [Abst. from abst. in *Bull. Hyg., Lond.* **24**. 981-982. (1949), copied *verbatim*. Signed: E. L. MIDDLETON.] **1124**

Injuries of the skin among hospital workers and others who come into contact with streptomycin have been met with since 1947, and the extended use of this agent has resulted in a considerable increase in the risk, which applies also to those engaged in its preparation. The lesions affecting workers are different from the reactions of patients receiving streptomycin in the course of treatment. The frequency of occurrence is about 30 per cent. of those exposed. A period of delay in the appearance of the symptoms has been noted; it is usually from two to six months from first exposure; rarely it is less than three weeks. Besides nurses actually handling streptomycin, other persons in the same room, such as ward maids and laboratory workers, may develop allergic symptoms without contact; in them the symptoms are usually mild.

General symptoms include headache, vertigo, nausea, and rhinitis. Affections of the skin and mucous membranes include blepharo-conjunctivitis, lachrymation and irritation of the eyes; eczema affects chiefly the exposed parts of the body: face, hands, and antecubital space. There is evidently a specific individual sensitivity to streptomycin which develops during a period of exposure in six months or a year, but the delay is shorter in allergic subjects.

Prevention and treatment were discussed.

CRUICKSHANK, C. N. D., & SQUIRE, J. R. (1949.) **Skin sensitivity to cetrimide (CTAB).**—*Brit. J. Indust. Med.* **6**. 164-167. [Abst. in *Bull. Hyg., Lond.* **24**. 981. (1949), copied *verbatim*. Signed: E. L. COLLIS.] **1125**

Cetyl trimethyl ammonium bromide, known as Cetrimide or CTAB is coming into use as a cleanser and skin antiseptic, both for the initial treatment of wounds and also during their subsequent redressing. However, 14 cases are now reported where troublesome skin reactions developed, caused by the application of this agent. Three typical cases are quoted in detail. The skin appearances conform to those of any chemical sensitization reaction. There is a local dermatitis which may be an acute vesicular irritating eruption, sometimes becoming a generalized vesicular dermatitis affecting areas of skin to which CTAB has not been applied; such areas are those exposed to friction. In cases of doubt the diagnosis can be confirmed by the patch test; in 24 hours the site of the patch was raised and reddened, and in 48 hours a crop of fine superficial vesicles appeared. The reaction faded in a few days. Eosinophilia frequently accompanied sensitivity reactions; but its value as an aid to diagnosis appeared to be limited. Several applications of CTAB seemed necessary to establish sensitivity; but once established, sensitivity was of long standing. The disability lasted from two to three weeks, but the condition was not serious. Ex-

applications at subsequent redressings. Cetrimide has many advantages as a wound cleanser and it is neither necessary nor desirable to discontinue its use, so long as precautions are taken.

periments failed to determine which part of the CTAB molecule was the noxious agent. Cetrimide should only be used for the primary cleansing of wounds, so eliminating multiple

See also abst. **1091** (? *Senecio* poisoning).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

GELLHORN, A., ROSE, H. M., & CULBERTSON, J. T. (1947.) **The plasma antimony concentration and the urinary antimony excretion in man during therapy with organic antimony compounds.**—*J. trop. Med.* (*Hyg.*). **50.** 27-31. [Authors' summary copied *verbatim.*] **1126**

The plasma antimony concentration was determined in 40 filarial patients receiving therapeutic doses of three tervalent antimonials, Anthiomaline, Fuadin, and tartar emetic and three quinquevalent antimony compounds, Neostam, Stibanose, and Neostibosan. It was found that the highest antimony concentrations were attained in the plasma of patients receiving Neostibosan; the maximum concentration was about 1·5 mgm. antimony per 100 ml. of plasma. Much lower plasma antimony concentrations were observed in individuals receiving Neostam and only traces of antimony could be detected in the plasma following the injection of Stibanose and of all of the tervalent antimony compounds. On the basis of these findings it was suggested that Neostibosan might be the chemotherapeutic agent of choice against antimony-susceptible parasites which are present in the blood stream.

The urinary excretion of Neostibosan and Fuadin antimony was determined in five hospitalized patients and it was found that the quinquevalent antimony of Neostibosan is excreted to a far greater extent relative to the antimony dosage than is the tervalent antimony of Fuadin. The implications of this finding with regards to the cumulation of antimony in the body in the presence of renal pathology are discussed in the text.

REYNOLDS, M. (1950.) **Fluid therapy for the dehydrated animal.**—*Vet. Ext. Quart. Univ. Pa.* **51.** No. 5. pp. 1-14. [Abst. from author's summary.] **1127**

The composition and proportionate amounts of plasma, interstitial and intracellular fluids, the osmotic factors involved in changes in these fluids, the maintenance of the pH of the extracellular fluid and the respective roles of the gastrointestinal tract, respiratory tract, skin and kidneys in the intake and output of water were discussed. Suggestions were made for restoration of the fluid, especially with regard to the route of administration. Types of dehydration resulting from water deprivation, loss of gastrointestinal secretions and hemorrhage were considered separately.

BAILEY, J. H., & CAVALLITO, C. J. (1950.) **The effect of aliphatic acids on the activity of certain antibacterial agents.**—*J. Bact.* **60.** 269-274. [Authors' summary copied *verbatim.*] **1128**

Aliphatic acids of 10 to 18 carbon atoms enhance the bacteriostatic action of streptomycin and certain other basic antibacterial agents, decrease the activity of the acidic penicillin, and are without effect on the neutral nonlipophilic antibiotic from *Centaurea maculosa.* It is reasoned that the lipophilic acids are held in (or on) the cell, through Van der Waal's bonding with cellular lipoids, thereby increasing the concentration of anionic groups at the site at which the antibacterial agent reacts with its bacterial substrate.

GAENSLER, E. A., BEAKEY, J. F., & SEGAL, M. S. (1949.) **Pharmacodynamics of pulmonary absorption in man: I. Aerosol and intratracheal penicillin.**—*Ann. intern. Med.* **31.** 582. [Abst. in *Amer. Rev. Tuberc.* **61.** 62-63. (1950), copied *verbatim.*] **1129**

The authors have undertaken a comprehensive study of the pharmacologic and mechanical aspects of direct medication of the human lung. This report deals with the pharmacodynamics of absorption and excretion of penicillin from the normal human lung; the results are compared with those of parenterally administered penicillin. Ten volunteers received 100,000 units of penicillin intramuscularly in 1·0 cc. of saline. The peak blood level occurred one-half hour after injection; the average level, at that time, was about one unit per cc. of serum. The level declined rapidly but significant levels were maintained for only three hours. Urinary excretion paralleled the blood levels. The total average urinary excretion was

47·24 per cent of the total injected. Nine subjects received 100,000 units of penicillin in 10 cc. of saline by the endotracheal route. After the cough reflex was suppressed by instillation of 2 per cent Pontocaine solution, the penicillin was administered through a tracheal catheter. The average blood level at one-half hour (0·14 unit per cc.) was one-eighth that obtained with the same dose administered intramuscularly. The levels continued to increase and reached their peak (0·17 unit per cc.) two hours after administration. At the end of three hours, the average level (0·11 unit per cc.) was almost twice as high as the comparable intramuscular level 0·07 unit per cc.). Significant blood levels (0·04 unit per cc.) were maintained for twice as long as with intramuscular administration. Total urinary excretion was 15·9 per cent. Twelve subjects received 100,000 units of penicillin in 1·0 cc. of saline by aerosolization with the nebulizer-rebreathing bag apparatus. The average blood level at one-half hour was 0·12 unit per cc. At two hours, seven of the twelve serums showed significant levels. No significant levels were encountered after two hours.. Total urinary excretion averaged 5·46 per cent. The results indicate that absorption from the alveoli is much slower than from muscle and that satisfactory blood levels can be achieved by the intratracheal route of administration which is not practical as a routine procedure. In chronic suppurative disease, parenterally administered penicillin does not reach the purulent sputum. High local concentrations are needed; for this purpose aerosolization by the nebulizer is a practical method which can be used at home. Following aerosolization 5·5 per cent of the penicillin is lost in the urine; 10·2 per cent is lost in the apparatus; 8 per cent is lost in the oropharynx; and 47·5 per cent is lost on expiration and other losses into the air. Thus one-third of the aerosolized penicillin actually reaches the lung.

Mosonyi, L., Held, R., & Kocsán, C. (1948.) **On the diffusion of penicillin.**—*Acta med. scand.* 132. 487 - 494. [In English.] [Authors' summary copied *verbatim.*] **1130**

Diffusion qualities of penicillin are different from those of other crystalline substances. Penicillin *in vitro,* passing through jellies, is absorbed by colloidal substances and its diffusion is greatly influenced by this absorption. Such an absorption can be lessened by sodium dehydrocholicum and the penicillin thus regained does not lose its former efficiency.

Gilbert, R. A., Call, R. A., & Roose, D. J. (1949.) **The clinical results of combined penicillin and ice therapy.**—*Johns Hopk. Hosp. Bull.* 84. 245-254. **1131**

In certain chronic conditions in human beings in which secondary infection is a feature —including varicose ulcer and epidermophytosis —comparative tests were made of the effect of treatment by (1) local application of ice, (2) intragluteal injections of penicillin, and (3) ice combined with local infiltration of penicillin. The last gave the quickest results. Although chilling could be expected to inhibit multiplication of the organisms and so to lessen their sensitivity to penicillin, chilling of the lesions does not seem to produce temperatures which prevent multiplication. On the other hand, it may slow up the action of penicillinase or of any other substance interfering with penicillin, and it may prevent diffusion of penicillin from the site of infection.—A. Mayr-Harting.

Spicer, S. (1950.) **Bacteriologic studies of the newer antibiotics: effect of combined drugs on microorganisms.**—*J. Lab. clin. Med.* 36. 183-191. [Author's summary copied *verbatim.*] **1132**

A study has been made of the in vitro effect of aureomycin, Chloromycetin, streptomycin, dihydrostreptomycin, penicillin, and bacitracin on bacterial strains of several species. Results indicate a destructive action by each antibiotic studied on the majority of organisms in a sensitive strain. The residual viable organisms differ, as to numbers and character, with the antibiotic and the bacterial strain tested. The effect of antibiotics used in pairs may be one of four types, namely, synergistic, additive, interfering, or indifferent, depending on the particular combination of drugs for a given bacterial strain.

Doll, E. R., Wallace, M. E., & Hull, F. E. (1950.) **Serum levels of streptomycin in horses and sheep.**—*Bull. Ky agric. Exp. Sta.* No. 548. pp. 11. [Authors' summary copied *verbatim.*] **1133**

In-vitro inhibition of cultures obtained from infections in horses required 16·0 units/ml of medium for *Escherichia coli,* 16·0 or more units/ml for *Corynebacterium equi,* 4·0 to 16·0 units/ml for *Shigella equuli,* and more than 16·0 units/ml for streptococci.

The serum-level response of horses and sheep following intramuscular administration of streptomycin were approximately of the same concentration when doses were equal in milligrams per pound of body weight.

In general, doses of 0·25 mg of streptomycin per pound of body weight at 3-hour

intervals maintained serum levels of 1·0 to 2·0 units/ml of serum. Doses of 0·5 mg/lb produced serum levels of 2·0 to 4·0 units/ml, doses of 1·0 mg/lb resulted in serum concentrations of 4·0 to 8·0 units/ml, doses of 2·0 mg/lb maintained serum levels of 8·0 to 16·0 units/ml, and doses of 4·0 mg/lb produced levels of 16·0 to 32·0 units/ml. Serum concentrations above and below these ranges were occasionally obtained when streptomycin was injected at 3-hour intervals.

LONG, P. H. (1949.) **The present status of polymyxin, chloromycetin and aureomycin: Experimental and clinical.**—*Amer. J. Pharm.* **121.** 62-75. [Abst. in *Bull. Hyg., Lond.* **24.** 691. (1949), copied *verbatim.*] **1134**

Polymyxin [a mixture of substances isolated from cultures of *Bacillus polymyxa*] is an effective antibiotic for the treatment of severe infections produced by *Ps. aeruginosa, H. pertussis, H. influenzae, E. coli* and *A. aerogenes.* Its toxicity to date precludes its general use in infections susceptible to its therapeutic effects.

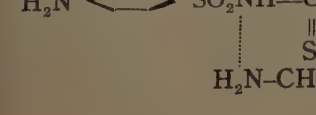
Chloromycetin has been demonstrated to be an effective antibiotic agent for the treatment of rickettsial diseases and typhoid fever. It will undoubtedly prove effective in the treatment of other infections produced by *Ps. aeruginosa, H. pertussis, H. influenzae,* viral agents.

Aureomycin has been shown to be an active antibiotic agent against rickettsial diseases, primary atypical pneumonia, acute brucellosis, staphylococcal infections, urinary tract infections produced by *E. coli, A. aerogenes* and *Strep. fecalis,* certain eye infections, pneumococcal and streptococcal infections, and certain infections produced by viral agents. Its clinical use in forms of extra-pulmonary tuberculosis is in the highly experimental stage. It is not recommended in typhoid fever and it seems to be ineffective in whooping cough.

To date, neither chloromycetin nor aureomycin have shown significant signs of toxicity.

DRIESEN, W., GRÜN, L., & RUMMEL, W. (1949.) Zur Wirkungsweise des Marbadal. **[On the mode of action of Marbadal.]**—*Dtsch. med. Wschr.* **74.** 502-505. [Abst. in *Bull. Hyg. Lond.* **24.** 897-898 (1949), copied *verbatim.* Signed: F. HAWKING.] **1135**

Marbadal is a salt of sulphothiocarbamid (Badional) and Marfanil with the formula



It was described by KLARER in 1947 (Deut. med. Woch., 1947, v. 72, 670) and DOMAGK showed that it had a greater bacteriostatic action than either of its components. Strains of enterococci were taken, which were resistant to the ordinary sulphonamides including Badional. On these, Marbadal was twice as active in producing bacteriostasis as Marfanil, and its action was not inhibited by *p*-aminobenzoic acid. Strains of *Bact. coli* were also taken, which were sensitive to sulphonamides including Badional, but not to Marfanil. On these, Marbadal was more active than Badional but its action was annulled by *p*-aminobenzoic acid. The same results were produced by a simple mixture of Badional and Marfanil.

It is known from American work that the activity of sulphonamides depends on their ionization. Measurements of the dissociation of Marbadal show that it is more completely ionized than either of its two components, Badional and Marfanil. It is concluded that its high bacteriostatic activity is due to this high degree of ionization.

EDMONDS, E. V. (1948.) **Sulfamerazine and sulfathalidine (phthalylsulfathiazole) for enteritis-pneumonia syndrome in swine.**—*Vet. Med.* **43.** 460-462. **1136**

Eighty-eight per cent of cases of enteritis-pneumonia syndrome in young pigs recovered when treated with sulphamerazine or sulphathalidine. Details of treatment are given.

—R. MARSHALL.

SCHLENKER, F. S., & SIMMONS, B. K. (1950.) **The absorption, distribution, and excretion of sulfaquinoxaline in poultry.**—*Amer. J. vet. Res.* **11.** 291-295. [Authors' summary copied *verbatim.*] **1137**

Sulfaquinoxaline accumulates more rapidly in chicken blood than do the more commonly used sulfonamides. Sulfaquinoxaline diffuses into the egg in proportion to the blood concentration. Acetylation is not extensive in the chicken. After the sulfaquinoxaline supply is removed, the concentration in blood decreases slowly, and small traces of drug can be detected after 112 hours.

It is suggested that prolonged blood concentrations may be due to binding with hemoglobin and that in general the quantity of drug which must be maintained in the blood to control disease should be related to the degree of challenge and to the activity of the particular sulfonamide against a specific organism. Thus, a single blood concentration designated to control

disease, and applied to all sulfonamides, is meaningless.

FLORIO, R. (1948.) Les antihistaminiques de synthèse en médecine vétérinaire. Bilan actuel. **[Synthetic antihistamines in veterinary medicine.]**—*Rev. Path. Comp.* **48.** 524-544. [English summary.] 1138

F. discussed the general pathological picture of histamine when injected into animal tissue, drawing attention to its effect in laminitis, myohaemoglobinurea, periodic ophthalmia, eczema, vaccine shock and urticaria, and particularly to the work of Desliens, who found that 20 μg. of histamine hydrochloride injected intravenously produced laminitis. Again in periodic ophthalmia and recurrent fever he described a similar set of symptoms produced by the injection of histamine.

F. used extensively the antihistamine compounds neoantergan and antergan with excellent results, the most spectacular being those produced in acute founder and eczema.

He considered that there is a future for this form of therapy in photo-sensitization, acute pulmonary oedema, vaccine shock, intestinal congestion and other allied conditions, and recommended the intravenous routes of administration in the horse and ox and the intramuscular route in the dog.—W. R. KERR.

CHAVANCE, M., & CHAVANCE, J. (1948.) Les antihistaminiques dans le traitement de la fourbure aiguë du cheval: résultats de 1947. Mécanisme d'action de ces substances. **[Antihistamine in treatment of laminitis in horses.]**—*Rev. Path. Comp.* **48.** 562-565. 1139

The authors discussed the successful use of the antihistamine neoantergan in acute laminitis until this year, when there were two failures out of six cases, the suspected cause being that the doses were insufficient and the interval between them too long.

They described the views of other workers on the mechanism of the disease, *i.e.*, by the circulation of histamine and its conflict with the tissues, with resultant hypertension and shock. Treatment must therefore be early and the dose adequate.—W. R. KERR.

WHEELER, R. S., & HOFFMANN, E. (1948.) **Prolapse and "pickout" in diethylstilbestrol-treated cockerels.**—*Cornell Vet.* **38.** 89-92. 1140

It is deduced from experiments on 12 cockerels implanted with diethylstilboestrol that eversion of the vagina and "pick out" [cannibalism] in laying hens is in some way associated with oestrogen blood levels.—A. T. COWIE.

HARVEY, A. M. (1950.) **Introduction to series of papers in studies on ACTH and cortisone.**—*Johns Hopk. Hosp. Bull.* **87.** 349-353. 1141

H. discussed the development of interest during the last 50 years in hypersensitivity including the tuberculin and anaphylactic types, especially in regard to their relationship to a variety of disease processes. He traced the steps taken to confirm the theory that the anaphylactic type of hypersensitivity may play a basic role in the pathogenesis of certain disease states, and the relationship was made clear when widespread lesions typical of periarteritis nodosa were produced in rabbits by inducing a sensitivity reaction to horse serum.

The need is emphasized for a better understanding of the basic mechanisms of hypersensitivity and the importance of careful study of the possible role of sensitization in the pathogenesis of a wide variety of diseases. Studies on basic mechanisms and clinical observations are recorded in the following six absts.—E.M.J.

I. CAREY, R. A., HARVEY, A. M., HOWARD, J. E., & WAGLEY, P. F. (1950.) **The effect of adrenocorticotropic hormone (ACTH) and cortisone on drug hypersensitivity reactions.**—*Johns Hopk. Hosp. Bull.* **87.** 355-386. 1142

II. CAREY, R. A., HARVEY, A. M., HOWARD, J. E. & WINKENWERDER, W. L. (1950.) **The effect of adrenocorticotropic hormone (ACTH) and cortisone on the course of chronic bronchial asthma.** — *Ibid.* 387-414. 1143

III. BORDLEY, J. E. (1950.) **Observations on changes taking place in the upper respiratory tract of patients under ACTH and cortisone therapy.**—*Ibid.* 415-424. 1144

IV. CAREY, R. A., HARVEY, A. M., & HOWARD, J. E. (1950.) **The effect of adrenocorticotropic hormone (ACTH) and cortisone on the course of disseminated lupus erythematosus and peri-arteritis nodosa.** — *Ibid.* 425-460. 1145

V. HARVEY, A. M., HOWARD, J. E., & KATTUS, A. A. (1950.) **The effect of adrenocorticotropic hormone (ACTH) and cortisone on certain diseases of the eye in which hypersensitivity plays a rôle.**—*Ibid.* 461-481. 1146

VI. WOODS, A. C., & WOOD, R. M. (1950.) **The action of ACTH and cortisone on experimental ocular inflammation.**—*Ibid.* 482-503. [Authors' summaries copied *verbatim*.] 1147

I. The effect of ACTH and cortisone on the various clinical manifestations of hypersensitivity to iodine, sulfonamide, penicillin, acetylsalicylic acid, hydroxy-phenyl-cinchoninic acid and atropine have been described. Studies before and during the administration of ACTH have been carried out on a case of paroxysmal (cold) hemoglobinuria in whom urticaria appeared after chilling.

The results of the readministration of penicillin, atropine, acetylsalicylic acid, and hydroxy-phenyl-cinchoninic acid to sensitive patients during ACTH administration have been outlined.

The effects of ACTH on the hemotological picture in two patients with leucopenia following the administration of sulfonamides have been observed.

II. It has been conclusively demonstrated that stimulation of the adrenal glands by ACTH and administration of cortisone in sufficient doses have a beneficial effect on the clinical manifestations of chronic bronchial asthma. Complete remissions lasting from four days to over ten months have been obtained.

The various factors which determine the length of freedom from symptoms have not been determined, but an equally satisfactory response can be obtained following a second and third course of treatment with ACTH.

A much longer experience is necessary before a proper evaluation of the therapeutic implications of these agents can be made. At present it seems that they may be used profitably for brief periods of time in severe asthmatic states, provided they are not given to patients to whom other physiological effects of these hormones might prove dangerous.

III. Changes have been noted in the tissues of the upper air passages under adrenal cortical stimulation by ACTH and following the administration of cortisone. During exhibition of ACTH the nasal mucous membranes lose their swelling, develop a slate-pink color and are covered with a thin layer of clear mucus. Polyps lose their translucence, become pink and begin to shrink, in many cases disappearing completely. Such changes seem to be correlated with the initial eosinopenia developing under ACTH therapy. Changes have also been observed in the nasopharyngeal lymphoid tissue. It becomes clearly outlined from its surrounding structures, developing an orange-pink color. Discharge around it clears up and the crypts become more prominent. Microscopic studies show no demonstrable change in such lymphoid tissue or in the nasal polyps.

The changes in the nose and nasopharynx regress after discontinuing therapy. Within a few days the nasal mucosa loses its dusky appearance, and the lymphoid tissue returns to its former state. Nasal polyps return in from two weeks to two months.

Cortisone therapy has very much the same effect on the tissue of the respiratory tract, except that no marked color change was noted in the nasal mucosa or in the nasopharyngeal lymphoid tissue in the patients under such treatment. Nasal sprays of cortisone have resulted in a slow but definite regression of nasal polyps.

IV. Experience gained over a period of twelve months in the treatment of 12 patients suffering from disseminated lupus erythematosus with ACTH and cortisone has been described. In general, the results have been very encouraging and complete remissions lasting up to eleven months have followed a single course of treatment.

Five patients who had extensive cutaneous lesions without any outstanding systemic manifestations have been observed. Four were treated with ACTH and one with cortisone. In three the results have been excellent and in two no satisfactory response was obtained.

The clinical course of a patient with florid periarteritis nodosa who was treated with ACTH is described. Serial muscle biopsy studies showed healing of the lesions.

V. The results of the administration of ACTH and cortisone in two cases of nongranulomatous iritis, in three cases of sympathetic ophthalmia, in five cases of ocular tuberculosis, in one of vernal conjunctivitis, and in two with uveitis following herpes zoster ophthalmicus have been described. The results have been beneficial in each instance, and in those cases with involvement of the anterior portion of the eye cortisone applied locally has been effective.

The most striking effect of these hormones has been in the prompt control of the inflammatory and exudative manifestations resulting from these various diseases of the conjunctiva and uveal tract; with parenteral administration there was observed uniformly a subsidence of pericorneal congestion, clearing of the vitreous, diminution of exudates, and disappearance of retinal edema. Cortisone applied locally has not influenced vitreous exudation or changes in the posterior uveal tract.

VI. Cortisone and ACTH injected par-

enterally have a profound effect on the inflammatory phase of the hypersensitive reaction, blocking the inflammation and exudition which occurs in the ocular protein anaphylactic reaction, the opthalmic reaction secondary to bacterial allergy, and the focal reaction in tuberculous eyes.

Cortisone and ACTH block effectively the inflammatory reaction in the eye produced by glycerin and jequirity infusion.

Cortisone injected locally in the anterior chamber has an immediate but temporary effect in blocking the inflammatory phase of the protein anaphylactic reaction in the eye, and the inflammatory reaction secondary to the anterior chamber injection of glycerin and jequirity.

The accumulated clinical and experimental evidence of the effect of cortisone on ocular inflammation suggests that its effect may be due to a direct action on the local mesenchymal tissue.

TURNER, T. B., & HOLLANDER, D. H. (1950.) **Cortisone in experimental syphilis, (a preliminary note).**—*Johns Hopk. Hosp. Bull.* **87.** 505-509. [Authors' summary copied *verbatim*.] **1148**

Under the influence of cortisone therapy, syphilomas induced in rabbits by intradermal or intratesticular inoculation of *Treponema pallidum* show striking alterations from the picture usually observed in experimental syphilis, in that the lesions become soft and spongy, there is an excessive accumulation of a mucoid material tentatively identified as hyaluronic acid, treponemes are unusually abundant, and the production of Wassermann reagin seems to be inhibited. Upon withdrawal of cortisone there is a rebound phenomenon in which the lesions reach an unusual size.

DOYLE, L. P., ANDREWS, F. N., & HUTCHINGS, L. M. (1950.) **The use of cortisone and ACTH in rheumatoid disease in swine.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 373-374. [Abst. from authors' summary.] **1149**

Disease conditions occur in swine which bear considerable resemblance to rheumatic or rheumatoid diseases in human beings. Some pigs naturally affected with rheumatoid conditions showed improvement following treatment with cortisone and also with ACTH [adrenocorticotrophic hormone].

I. WATZKA, A. (1949.) Über ein neues gonadotropes Hypophysenvorderlappenhormon-Präparat. [**A new pituitary gonadotrophic preparation.**]—*Wien. tierärztl. Mschr.* **36.** 753-756. **1150**

II. GRATZL, E. (1949.) Bemerkungen zu vorstehender Mitteilung. [**Remarks on the previous article on a pituitary gonadotrophic preparation.**]—*Ibid.* **36.** 756-757. **1151**

III. WOHLZOGEN, F. X. (1950.) Zur Arbeit A. Watzka's: „Über ein neues gonadotropes Hypophysenvorderlappenhormon-Präparat." [**On A. Watzka's paper on a new gonadotrophic preparation.**] — *Ibid.* **37.** 128-130. **1152**

I. Gonadotrophins adsorbed on aluminium hydroxide or aluminium phosphate are said to be slowly liberated when injected subcutaneously. A preparation composed of a mixture of gonadotrophins so adsorbed is claimed to be of considerable therapeutic value.

II. A short discussion on physiology of gonadotrophins.

III. A note on Watzka's paper correcting some mis-statements and criticising the vague statements made regarding the composition and biological activity of the new preparation.

—A. T. COWIE.

DYBING, O. (1949.) Eksperimentelle undersøkelser over kloralhydrat i kombinasjon med magnesiumsulfat o g pentymalnatrium. [**Chloral hydrate in combination with magnesium sulphate and pentobarbital sodium.**] —*Nord. Vet.-med.* **1.** 403-409. [English summary.] **1153**

The toxicity of chloral hydrate and of magnesium sulphate was determined on adult male mice. The LD_{50} for chloral hydrate given intraperitoneally was 0·6 mg. per g. and that for magnesium sulphate given subcutaneously was 0·9 mg. per g. body weight. The combined action on mice of the two drugs was observed. The action and dosage of pentobarbital sodium injected intraperitoneally was determined and the combined action of chloral hydrate-pentobarbital sodium was studied.

Combined chloral hydrate-magnesium sulphate should provide a safer and more effective anaesthesia than chloral hydrate alone. Chloral hydrate-pentobarbital sodium anaesthesia is contra-indicated.—F.E.W.

FORSSLING, S. (1949.) En ny typ av insektsmedel med märkliga farmakologiska egenskaper. [**A new type of insecticide with remarkable pharmacological properties.**]—*Nord. Hyg. Tidskr.* No. 5. pp. 133-144. [English summary.] [Abst. in *Bull. Hyg., Lond.* **24.** 888. (1949), copied *verbatim*. Signed: D. J. BAUER.] **1154**

An account is given of the properties of hexaethyltetra-phosphate, tetraethylpyrophosphate, and diethyl-*p*-nitrophenylphosphate. The toxicity of the last-named compound was investigated, and the following figures were obtained for the LD50 by subcutaneous injection: mice, 25 mgm. per kilo.; rats, 30 mgm. per kilo; guineapigs, 45 mgm. per kilo.; and rabbits, 45 mgm. per kilo. The compound is thus much less toxic than the first two substances, and four to five times less toxic than nicotine, and is considered to be suitable for sale to the public as an insecticide, with the proviso that masks and gloves should be worn when spraying is done.

GRÜN, L., & SCHOLTIS, K. (1949.) Untersuchungen über die Anwendung von Triaethylenglykol zur Luftdesinfektion. **[Triethyleneglycol in disinfection of air.]**—*Zbl. Bakt. I.* (*Orig.*) **154.** 357-364. [English, French and Russian summaries, English summary slightly modified.] **1155**

The importance of droplet infections for the spreading of infectious diseases is briefly mentioned. By vaporizng tri-ethylene glycol by means of hot air it is possible to make a room practically sterile within 15 min. and concentrations as low as 1:250 millions are still effective. The mode of operation and the possibilities of application are pointed out.

See also absts. **909** (sulphathiazole-resistant *Staph. aureus*); **910** (penicillin and sulphone in staphylococcal mastitis); **911** and **914** (penicillin in mastitis); **915** (antibiotics); **918** (aureomycin in anthrax); **919-920** (disinfectants against anthrax spores); **928** (resistance of tubercle bacilli to chemotherapeutics); **937** (aureomycin hydrochloride in *Corynebact. pyogenes* infection); **944** (joint-ill in foals); **953** (pullorum disease); **954** (fowl typhoid); **963-966** (brucellosis); **973** (botulism); **980** (quaternary ammonium compounds in favus); **981** (mycosis); **983** (fungistatic activity of vitamin K); **1001** (coccidiosis); **1003** (anaplasmosis); **1033** (orally administered insecticide against lice); **1036** (D.D.T.); **1124** (skin affections caused by streptomycin); **1125** (CTAB); **1176-1177** (ACTH and cortisone); **1243** (pharmaceutical codex); **1277** (book, sulphonamides).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

LEE, D. H. K. (1950.) **Studies of heat regulation in the sheep, with special reference to the Merino.**—*Aust. J. agric. Res.* **1.** 201-216. **1156**

L. states that "this paper is a tentative application to a particular animal, the sheep, of concepts concerning heat regulation in 'warm-blooded' animals, built up over ten years of laboratory, field and library enquiry".

The energy balance of an animal is expressed as $M=R+C+E+S$ where M=rate of heat production in the body, R=rate of heat loss by radiation, C=rate of heat loss by conduction−convection, E=rate of heat loss by evaporation−convection and S=rate at which heat is taken up by a rise of body temperature. More information is required on all these factors, especially on solar radiation and, in sheep, on skin temperature, the thermal characteristics and moisture relationships of the fleece, and the physiology of sweat glands.

A description of the chief methods of heat regulation in the sheep under hot conditions is accompanied by data from the literature. On exposure to heat the respiratory rate of the Merino may rise from 50 to 160 or 350 respirations per min., and the respiratory volume from 4 l. per min. to 49 l. per min.; skin temperature rises; it is deduced from observed water losses that sweating takes place. Exposure to cold is probably accompanied by increased metabolic rate. Secondary involvements of heat regulation are disturbances in acid-base balance, dehydration and reproductive failure, all of which require closer investigation. The sheep does not develop symptoms of heat stroke or collapse at rectal temperatures below 108°F. Humidity at high temperatures, the nature of the fleece and the plane of nutrition have important effects on heat tolerance. Little exact information is available on cold tolerance in the sheep.

In the laboratory and in the field there are important differences between sheep breeds in tolerance to heat, cold and humidity. Of seven quadruped species investigated at the University of Queensland the sheep is the most tolerant to heat and to a rise in body temperature.

—M. H. HARDY.

ADOLPH, E. F. (1950.) **Thirst and its inhibition in the stomach.**—*Amer. J. Physiol.* **161.** 374-386. [Author's conclusions copied *verbatim*.] **1157**

Water placed into the stomach through a tube inhibited immediate drinking in proportion to the filling of the stomach in 3 species (rat, hamster and guinea pig), but had very little immediate effect in 2 species (dog and young rabbit). Hence the factors that limit immediate drinking were located (at least in part) in the stomach in 3 species though they did not require a distension approaching gastric capacity, and were not located there in 2 species (except when the stomach was excessively distended). Rapidity of drinking and lack of intragastric inhibition suggested a pharyngeal metering in dog and young rabbit. Deficit of body weight was a direct measure of water deficit, at least in dog, rat and rabbit; for, animals of those species, in water deficits up to 5 per cent

of body weight, drank enough water, and not too much, to restore their body weights to within one per cent of the initial weights. The other 3 species, as also man and cat, required food and time in recovering their initial body weights. Experimental procedures, affecting water exchanges that incidentally diminished the food intakes, required control animals that were equally treated but allowed water *ad libitum*.

WEST, C. D., & RAPOPORT, S. (1950.) **Absence of respiratory change or manifest tetany with elevation of plasma pH produced by bicarbonate administration in dogs.**—*J. Lab. clin. med.* **36.** 428-434. [Authors' summary copied *verbatim*.] **1158**

Large amounts of sodium bicarbonate were administered intravenously to normal dogs. The serum pH rose to as high as 7·82 and the bicarbonate to nearly 50 meq. [milli equivalents] per liter. Contrary to common belief, ventilation, as measured by the pCO_2 [tension in mm. Hg.] remained practically unchanged, and tetany did not occur. These results, in agreement with evidence in the literature, indicate a discontinuous effect of pH on both respiration and neuromuscular irritability. Neither function appears to be affected by elevation of pH in contrast to the well-known stimulation of respiration and inhibition of tetany produced by depression of pH.

RATHER, L. J., & ADDIS, T. (1950.) **Renin proteinuria in the rat. II. Evidence that renin does not interfere with the tubular resorption of purified human hemoglobin or bovine albumin.**—*J. exp. Med.* **91.** 567-572. [Authors' summary copied *verbatim*.] **1159**

The intraperitoneal injection of renin together with purified human hemoglobin or bovine albumin increases the weight of the kidneys and increases the number of athrocytosed particles of protein in the cells of the proximal convoluted tubules. In the case of bovine albumin administration there is a threefold increase in protein excretion in those rats given renin as compared with those given bovine albumin alone. A possible explanation of these effects is given.

MCCANDLESS, E. L., & DYE, J. A. (1950.) **Physiological changes in intermediary metabolism of various species of ruminants incident to functional development of rumen.**—*Amer. J. Physiol.* **162.** 434-446. [Authors' summary modified.] **1160**

Blood glucose was determined in young and/or adult ruminants of the following species: cattle, sheep, goat, addax antelope (*Addax nasomaculata*), aoudad (*Ammotragus lervia*), Asiatic sika deer (*Cervus sika*), Dybowski's deer (*Cervus dybowski*), *eland* (*Taurotragus oryx*), European red deer (*Cervus elaphus*), Indian blackbuck (*Antilope cervicapra*), mouflon (*Ovis musimon*) and white-tailed deer (*Dama virginianus*). The young ruminants were found to have blood glucose levels in the 'carnivore range' during the first few weeks of life. This is in contrast to the typical adult levels of 40 to 65 mg/100 ml. Young ruminants of 4 species exhibited much higher intravenous glucose tolerances than adult animals of the same species. The differences between young and adult ruminants are believed to result from metabolic changes incident to bacterial fermentation of carbohydrates in the rumen, as they appear when the young animals undergo a shift in diet from milk to hay. The glycemic level in these species bears an inverse relationship to the size and functional development of the rumen. Because both young and adult ruminants are unable to maintain their characteristic levels of blood glucose while fasting, it is postulated that ruminant species exhibit a relative deficiency in the pituitary-adrenal mechanism for mobilization of endogenous metabolites for gluconeogenesis under these conditions. The low intravenous glucose tolerance characteristic of adult ruminants is believed to be due to a high rate of exogenous gluconeogenesis. The necessity for this is obviated in the milk-fed young animal by absorption of carbohydrate *per se* from the gut. Adult llamas, Arabian camels, and one Arabian-Bactrian camel hybrid (pseudoruminants) were found to have blood glucose levels similar to those of the young ruminants, *i.e.* significantly higher than adult ruminants. The physiological basis of this is unknown.

GRANADOS, H., & DAM, H. (1950.) **On the histochemical relationship between peroxidation and the yellow-brown pigment in the adipose tissue of vitamin E-deficient rats.**—*Acta path. microbiol. scand.* **27.** 591-596. [In English. Authors' summary modified.] **1161**

A preliminary study was made on the cytochemical relationship between peroxidation and the yellow-brown pigment in the adipose tissue of rats fed a vitamin E-deficient diet containing 20% cod liver oil.

The yellow-brown pigment represents products formed, at least in part, from the highly unsaturated fatty acids at a stage later than the peroxide formation, and the light yellow, fat soluble fraction of the pigment seems to re-

present fat peroxides, the precursors of the yellow-brown pigment. The role of dietary protein in the development of fat peroxidation and coloration was also pointed out.

ROMIJN, C. (1950.) Stofwisselingsonderzoek bij de kip. Proeven met Noord-Hollandse Blauwen. [**Respiratory metabolism in poultry.**]—*Tijdschr. Diergeneesk.* **75.** 465-480. [Abst. from English summary.] **1162**

R. described a method to determine the respiratory metabolism in "North Holland Blue" hens under controlled conditions of temperature and humidity, using a closed system, details being given. The nitrogen content of total excreta in 24 hours was 500–600 mg. corresponding with about 350 mg. nitrogen from urea and uric acid, and heat production differed by only about 0·5% from Lusk's (1924) determinations.

With increase of CO_2 even up to 7% in the inspired air the frequency of respiration was not altered appreciably, but when the concentration of CO_2 reached about 4% and that of the O_2 15% there was an increase of 50% in the minute volume (*i.e.* the tidal air × the number of respirations per min.).

HANSEN, M. F., TODD, A. C., KELLY, G. W., & HULL, F. E. (1950.) **Studies on the hematology of the thoroughbred horse. I. Mares in foal.**—*Amer. J. vet. Res.* **11.** 296-300. [Authors' summary copied *verbatim*.] **1163**

A hematologic study of a population of 65 Thoroughbred mares in foal revealed the following mean values with their standard errors: $10{\cdot}52 \pm 0{\cdot}102$ million erythrocytes per cubic millimeter; $14{\cdot}98 \pm 0{\cdot}128$ Gm. of hemoglobin per 100·0 ml. of blood; packed volume of erythrocytes, $45{\cdot}10 \pm 0{\cdot}362$ per cent; $10{\cdot}01 \pm 0{\cdot}187$ thousand leucocytes per cubic millimeter; mean cell volume, $42{\cdot}92 \pm 0{\cdot}253$ cubic microns; and a mean corpuscular hemoglobin concentration of $32{\cdot}96 \pm 0{\cdot}115$ per cent.

The differential leucocyte counts showed the following mean percentages and standard errors: neutrophils, $49{\cdot}19 \pm 1{\cdot}004$; lymphocytes $43{\cdot}79 \pm 1{\cdot}126$; monocytes, $2{\cdot}68 \pm 0{\cdot}154$; eosinophils, $3{\cdot}65 \pm 0{\cdot}238$; and basophils, $0{\cdot}66 \pm 0{\cdot}093$.

Results of *chi*-square tests of agreement between the observed distributions and theoretic distributions of the blood values according to the normal curve, together with measures of skewness, indicate that the normal curve of error is applicable to the distributions, with the possible exception of the hemoglobin and packed volume of erythrocytes, and that the usual measures of reliability can be used. In other words, one could confidently expect that about 95·0 per cent of all healthy Thoroughbred mares in foal in central Kentucky would show blood values within two standard deviations of the reported mean values.

BAROTTE, J., & GRASSET, R. (1946.) Étude de l'haptoglobine en médecine vétérinaire. [**Glucoproteins in the blood of horses.**]—*Bull. Acad. vét. Fr.* **19.** 145-154. **1164**

The sedimentation rates of blood taken from healthy and ailing horses have no significant differences so that such tests are of little diagnostic value. On the other hand, it has been found that horse blood, like human blood, contains a glucoprotein which forms an adsorption compound with haemoglobin in the presence of peroxidase. The formation of this compound can easily be observed and is expressed as the haptoglobin index. The average index in 40 healthy horses was found to be 0·50 and in 20 mares it was between 1·40 and 1·82; in three animals it was greater than 2·00. In six horses with one or other infectious disease, the index was found to be greater than 3·00. It was concluded that although further work is necessary, the determination of the haptoglobin index is a simple method of distinguishing between healthy and ailing horses, a raised index suggesting that tissue breakdown is occurring in the animal.—J. A. NICHOLSON.

BRODY, S. (1949.) **Environmental physiology with special reference to domestic animals. III. Influence of ambient temperature, 50° to 100°F., on the blood composition of Jersey and Holstein cows.**—*Res. Bull. Miss. agric. Exp. Sta.* No. 433. pp. 3-37. **1165**

Using a climatic chamber, the influence of varying environmental temperatures on Jersey and Holstein cattle was studied. With a rise of temperature, there was a tendency to hydration since cattle, a species which sweat only slightly, absorb more cool water in hot weather than is vaporized from the surface of the body. For the same reason, a rise of environmental temperature above 80°F. to 105°F. is reflected by a rise of rectal temperature to 108°F. Feeding also leads to an increase in heat production so that a reduction in food intake and therefore in milk yield is to be expected in hot weather. Blood analyses indicated that variations in environmental temperature had no effect on blood Ca, Mg, blood cell volume, Hb, or blood plasma protein. On the other hand catalase activity, blood glucose, non protein nitrogen and inorganic P tended to decline at temperatures above 85°F. whereas blood creatinine tended to rise.

—J. A. NICHOLSON.

REDA, H. (1950.) **Blood sedimentation rate in Egyptian buffaloes.**—*Vet. Med.* **45.** 411-412. **1166**

In buffalo sucklings, the sedimentation rate was lower than the average normal rate of adults. In calves, 1–6 months old it gradually increased to 40 mm. per hour. In young animals (6–24 months) the average rate was 35 mm. per hour, and in adults, 30 mm. per hour. In females the rate was a little higher. The sedimentation rate could not be used as a test for pregnancy.

LANGE, H. F.. & PALMER, H. (1948.) **Studies of erythrocyte counting. III. Physiological variations.**—*Acta med. scand.* **132.** 1-8. [In English. Abst. from authors' summary.] **1167**

Copious intake of liquids, work, the position of the body, pregnancy, the season of the year, altitude and age affect the erythrocyte count.

ESKILDSEN, P., GØTZSCHE, H., & TYBJAERGHANSEN, A. (1950.) **Measuring of the intra-arterial blood pressure during exercise.**—*Acta med. scand.* Suppl. No. 239. pp. 245-250. [In English. Abst. from authors' conclusions.] **1168**

The following data were obtained in some 20 experiments on human subjects: (1) The blood pressure rose rapidly after the commencement of work, falling after the termination of work, at first fairly rapidly, subsequently more slowly, and after 4–5 minutes it reached values which were often much lower than the values of rest prior to the work. If the work was increased, the pressure also increased. (2) The diastolic pressure varied but little, as a rule it followed the cystolic pressure on a minor scale. (3) The amplitude of pressure rose considerably during work.

In hypertonic subjects, all the above variations of pressure were accentuated, i.e., there was a greater rise of the systolic pressure at the same work performed, greater amplitude of the blood pressure, and a greater fall after the work. In the patient with coarctation a slight fall of the systolic blood pressure was noted during hard work, whereas the diastolic pressure rose.

A systolic fall was likewise observed in the untrained normal subject when the work was increased above a certain limit, but a very considerable rise in the pulse rate was noted besides. Probably there is a question of peripheral vascular insufficiency.

Otherwise the pulse rate keeps pace with the blood pressure.

MCKEE, F. W., & STEWART, W. B. (1950.) **Passage of radioactive erythrocytes from the peritoneal cavity into the blood stream during experimental ascites.**—*J. exp. Med.* **91.** 599-605. [Authors' summary copied *verbatim*.] **1169**

Intraperitoneal injection of red cells tagged with radioiron into dogs with experimental ascites demonstrated that such cells were rapidly transferred into the circulating blood. When the experimental animals were not actively producing ascitic fluid, 43·4, 67·0, and 56·4 per cent. respectively, of the administered radioactive red cells passed to the blood in 72 hours. In the same three dogs during active ascitic fluid formation, 25·9, 51·2, and 38·8 per cent. of the administered radioactivity was removed in a similar period.

The amount of radioactivity in the blood stream, consequent on the passage of red cells from the peritoneal cavity into the circulation, becomes nearly constant in 48 hours, whereas for radioactive plasma proteins the plateau is attained in 24 hours.

In normal dogs, the passage of red cells from the peritoneal cavity was complete in 72 hours, while in ascitic dogs, 5 to 47 per cent. of the injected tagged red cells remained behind in the peritoneum after the same period.

SCHICK, A. F., & HASS, G. M. (1950.) **The properties of mammalian striated myofibrils isolated by an enzymatic method.**—*J. exp. Med.* **91.** 655-664. [Authors' summary copied *verbatim*.] **1170**

A new method for the isolation of large numbers of individual myofibrils from fresh mammalian skeletal and cardiac muscle has been described. Purification of isolated myofibrils was accompanied by differential centrifugation of fresh frozen sections of muscle which had been mechanically agitated after exposure for 30 to 45 minutes at 0°C. to the action of a dilute solution of trypsin in a phosphate buffer solution with a pH of 7·0 and an ionic strength of 0·25.

Isolated skeletal myofibrils of the rabbit and man have similar constant solubility properties. They dissolve in an aqueous mixture of 0·5 N potassium chloride and 0·03 N sodium bicarbonate, giving viscous solutions which exhibit conspicuous birefringence of flow. They are soluble in buffer solutions (ionic strength 0·15) on the acid side of pH 4 and alkaline side of pH 10. If the ionic strength of potassium phosphate buffer solutions is increased to 0·5 or if the ionic strength of phosphate-borate buffer solutions is increased to a similar value

by addition of potassium chloride, the isolated myofibrils become soluble at neutrality. Hence it is possibe, first to isolate the myofibrils and then dissolve them without deviating appreciably from physiologic ranges of pH.

The extent to which myofibrils are modified by the conditions imposed by the method of isolation is unknown. There is no significant change in microscopic structure or optical birefringence. Furthermore, there is retention of a form of physiological reactivity, for when the isolated skeletal myofibrils are immersed in solutions of adenosinetriphosphate, they promptly and irreversibly change from elongated fibrils with distinct structural detail into dense spherical masses without recognizable microscopic structure.

SNIFFEN, R. C. (1950.) **The testis. 1. The normal testis.**—*Arch. Path.* **50.** 259-283. [Author's summary copied *verbatim*.] **1171**

The normal testis [in man] is reviewed as it develops and changes from early fetal life to senility. The study was undertaken to form a base line for (1) the evaluation of the abnormal testis seen in male infertility, (2) the interpretation of the testicular changes occurring in demonstrable endocrine disease, (3) observations of testicular atrophy following estrogen therapy and (4) the assessment of treatment for the undeveloped testis of eunuchoidism.

Particular attention is directed toward the following features of the metamorphosis and maintenance of the testis: (1) The appearance of the fetal interstitial cells and their rapid postnatal involution. The similarity of these changes and the phenomena that occur in the adrenal cortex after birth. (2) The gradual metamorphosis of Sertoli cells and the development of germ cell activity before and during puberty. (3) The sequence of the morphologic changes observed in the Leydig cells. (4) The inconstancy of specific changes encountered in the senile tstis and some details of the tubular sclerosis of senility.

MARLOW, H. W. (1949.) **Possible sources of the androgenic factor in cow manure.**—*Proc. Soc. exp. Biol., N.Y.* **72.** 215-217. **1172**

In this study immature rats, ovariectomized rats and single comb White Leghorn baby chicks of both sexes were used as experimental animals.

Extracts of fresh faeces and of bile from pregnant cows were tested for androgenic activity and the presence of 17-ketosteroids. One or two weeks incubation of faeces caused no increase in the latter. M. concluded that the bacterial flora was not concerned in the faecal androgen production.—P. H. HERBERT.

BECK, A. B. (1950.) **Studies on the excretion of oestrogens by pregnant ewes.**—*Aust J. Agric. Res.* **1.** 322-337. [Author's summary copied *verbatim*.] **1173**

Adaptations of standard methods are described for the preparation of oestrogenic extracts from the urine and faeces of sheep. The extracts were separated into strong phenols, non-ketonic weak phenols, and ketonic weak phenols. The concentration of oestrogen in these fractions was determined by bioassay. Special consideration was given to the accuracy of the methods in light of the findings of Friedgood, Garst, and Haagen-Smit (1948).

Four ewes were examined for urinary excretion only and seven ewes for both faecal and urinary excretion throughout pregnancy. Little or no excretion occurred until the last three or four weeks of pregnancy and even then the levels were consistently low. The faecal levels were higher than those of the urine. With one or two possible exceptions no strongly phenolic oestrogen was detected. Generally the ketonic oestrogen (calculated as oestrone) of both urine and faeces was higher than the non-ketonic oestrogen (as oestradiol). The daily levels observed during the last few weeks of pregnancy lay within the folowing ranges: urinary "oestradiol" $< 0{\cdot}2$–3 μg., "oestrone" $< 1{\cdot}5$–20 μg.: faecal "oestradiol" 1–20 μg., "oestrone" 1–100 μg. The faecal oestrogen was not conjugated.

Exploratory tests were made on ovaries, bile, and placentae. In all cases the oestrogen levels were low and both ketonic and non-ketonic activity was noted. In the bile most of the activity was found in the conjugated form.

No pregnanediol was found in the urine samples.

GROSSMAN, M. I. (1950.) **Gastrointestinal hormones.**—*Physiol. Rev.* **30.** 33-90. **1174.**

This is a comprehensive review on work on the physiology of the gastro-intestinal hormones covering the last 20 years. It is concluded that the existence of secretin and cholecystokinin has been fully established, while the evidence for gastrin, pancreozymin and enterogastrone is strong but not conclusive.

—A. T. COWIE.

VOGT, M. (1950.) **Regulation of secretion of cortical hormones.**—*Brit. med. J.* Dec. 2nd. 1242-1244. [Author's conclusions copied *verbatim.*] **1175**

Shortage of cortisone and of A.C.T.H. [adrenocorticotrophic hormone] has prompted the search for a treatment of rheumatoid arthritis which will stimulate the pituitary of the patient to secrete enough A.C.T.H. to obtain clinical improvement comparable to that achieved in the Mayo Clinic by injecting exogenous hormones. Insulin has been repeatedly tried, and, according, for example, to a recent report from the Oxford Regional Rheumatism Research Unit, with encouraging success (Kersley *et al.*, 1950). American authors, however, who gave insulin together with cortisone, had less convincing results (Henderson *et al.*, 1950), and Hench stated in a recent lecture at Edinburgh University that in the Mayo Clinic no benefit had been obtained from the combined use of insulin and cortisone. This apparent disagreement is easily explained in the light of the experiments referred to above, in which injected cortical hormones were shown to inhibit the pituitary response to stress. By giving the insulin along with the cortisone, the physician defeats his own ends, because he prevents the very release of A.C.T.H. which presumably constitutes the beneficial action of insulin in rheumatoid arthritis. Insulin can be expected to have the desired effect only if allowed to act without a simultaneous check on the action of the anterior lobe. In this instance, the fact that cortisone was probably not available to the British workers has proved to be of unexpected benefit to their patients.

LAST, J. H., JORDAN, P. H., PITESKY, I., & SIEGEL, B. M. (1950.) **Resistance to epinephrine stress in the dog.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 96-102. [Authors' summary slightly modified.] **1176**

The repetitive daily administration of epinephrine in the dog results in a progressively diminished eosinopenic response. During the state of epinephrine resistance, there is neither a depletion of endogenous ACTH [adrenocorticotrophic hormone] nor an exhaustion of the adrenal cortex. Adaptation of the organism to epinephrine stress with decreased tissue utilization of corticoids seems to explain most satisfactorily the phenomenon of epinephrine resistance at the present time. Demonstration of resistance to epinephrine speaks against epinephrine as the only physiological stimulus for the continuous secretion of ACTH.

TAUBENHAUS, M., & AMROMIN, G. D. (1950.) **The effects of the hypophysis, thyroid, sex steroids, and the adrenal cortex upon granulation tissue.**—*J. Lab. clin. Med.* **36.** 7-18. [Authors' summary and conclusions copied *verbatim.*] **1177**

Granulation tissue surrounding turpentine abscesses in white rats was studied histologically. Hypophysectomized animals failed to develop the amount of granulation tissue observed in normal animals. The anterior pituitary stimulated fibroblastic proliferation through its growth hormone, which, if administered to hypophysectomized animals actually promoted its formation beyond the normal response. In intact animals, growth hormone also produced stimulation; however, if injected in large doses it inhibited such tissues.

Thyroidectomized animals developed myxedema in the tissues studied. Administration of thyroxin to hypophysectomized animals stimulated formation of granulation tissues, indicating that the thyrotrophic hormone also plays a part in the stimulatory mechanisms.

Sex hormones given to intact animals inhibited granulation tissue formation; however, if growth hormone was injected simultaneously, it showed stimulatory effects in some instances, indicating that their inhibition was due to suppression of the anterior pituitary.

The adrenal cortex exerted its effect in two ways: desoxycorticosterone, if injected into intact animals prior to and during the turpentine abscess formation, had a profoundly stimulatory effect, affecting the fibroblasts and changing the appearance of the ground substance. Cortisone had an inhibitory effect upon fibroblasts and caused the appearance of large amounts of macrophages and inhibited collagen formation. Adrenocorticotrophic hormone of the anterior pituitary had a similar but less pronounced effect.

Growth hormone administered to adrenalectomized animals failed to produce its stimulatory effect.

See also abstr. 912 (bacterial infection and milk yield of quarters); 1070 (growth factor); 1073 (cobalt and ruminal digestion); 1202 (tropical climate and sexual activity); 1206 (lactation).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

GIBSON, J. M. (1950.) **Recent regulations relating to milk.**—*J. R. sanit. Inst.* **70.** 130-137. Discussion pp. 136-137. **1178**

The Minister of Agriculture is now put in charge of the production of milk on farms instead of the local authority. The designation Accredited will be dropped within a few years, and after 1957 Tuberculin Tested milk will be licensed only if it is produced from Attested herds. After 1950 Pasteurized milk must be sold only in bottles, and after 1954 these must be filled at the pasteurizing premises. Sterilized milk is recognized as a grade.

—J. O. L. KING.

BROWN, G. C. (1949.) **The possible significance of milk and water in the spread of virus infections.**—*Amer. J. publ. Hlth.* **39.** 764-771. **1179**

A general discussion from the viewpoint of human medicine on the subject of the spread of disease by milk and water, special mention being made of such diseases as infectious hepatitis, F. & M. disease, Q fever and others. B. concluded that with the possible exception of infectious hepatitis, milk and water, if involved, do not represent the major vehicle in the transmission of these virus diseases.

—D. S. RABAGLIATI.

COHN, E. G. (1950.) Undersøgelse af malkeredskaber ved hjaelp af svabermetoden. **[Examination of milking utensils by the swab method.]**—*Nord. Vet.-Med.* **2.** 237-249. [English and German summaries. Abst. from English summary.] **1180**

A general account based on American methods of dealing with milking utensils.

ANON. (1950.) **The bacteriological examination and grading of ice-cream.**—*Mon. Bull. Min. Hlth publ. Hlth Lab. Serv.* **9.** 231-239. [Summary and conclusions slightly modified.] **1181**

The results of the bacteriological examination of ice-cream samples by the methylene blue reduction test during 1949 confirm the previous conclusion that the test affords a simple and practicable means for the routine grading of the bacterial cleanliness of ice-cream. To obviate confusion in recording the result of the test it has been decided that any sample which fails to reduce methylene blue completely in four hours shall be classified as Grade 1. It has previously been pointed out that the results of the presumptive coliform test cannot be accepted as evidence of excretal pollution, since only a small proportion of these organisms belong to the faecal type, *Bact. coli* Type I. Further study has now shown that in samples of hot-mix ice-cream falling into Grades 1 and 2 most organisms classified on the basis of the 44°C. MacConkey broth test as *Bact. coli* Type 1 belong to irregular types and are presumably not of faecal origin. It may therefore be concluded that the assumed value of the coliform test in assessing the safety of ice-cream is without adequate scientific foundation.

LUBANETSKY, S. A. (1949.) **[Inspection of meat infected with leptospira.]** — *Veterinariya, Moscow.* **26.** No. 9. pp. 52-53. **1182**

The U.S.S.R. law prohibiting the use of meat infected with leptospira for human consumption has now been amended to read that carcasses with liver degeneration but no signs of jaundice or emaciation and with negative results of a bacterial examination after cooking . . . are fit for human consumption. Leptospira in infected meat die in 30 min. when heated to 50°–55°C. Such meat when cooked for 2–3 hours in small pieces became harmless. Pathological changes in and biochemical and bacteriological investigations of six infected carcasses of calves and cows are described. Cooked meat, liver and soup from these carcasses had a good appearance, quality and taste.—F.A.A.

YOUNG, H. E. (1948.) **Bluestained case timber and mould rots in hen eggs.**—*Qd J. agric. Sci.* **5.** 141-147. [Author's summary copied *verbatim*.] **1183**

It is demonstrated that mould rots in eggs can be artificially produced by infection with spores of a sap-staining fungus isolated from case timber.

Early treatment of eggs with the sodium salt of salicyl anilide was shown to be an effective preventive of decay in eggs caused by moulds under the conditions of the experiment but was ineffective against bacterial rots.

Trials involving various methods of handling showed that under normal export conditions bluestained hoop pine (*Araucaria cunninghamii*) timber has no effect on the quality of eggs when it is used as a case material.

ANON. (1950.) **Food poisoning in England and Wales, 1941-48. An analysis of weekly epidemiological reports submitted by directors of constituent and associated laboratories of the Public Health Laboratory Service, and**

by bacteriologists in certain hospital laboratories.—*Mon. Bull. Min. Hlth publ. Hlth Lab. Serv.* **9.** 148-258. [Summary slightly modified.] **1184**

All reports of food poisoning made to the Medical Research Council by constituent and associated laboratories of the Public Health Laboratory Service and by certain hospital laboratories in England and Wales during the years 1941-48 have been analysed.

These laboratories did not cover the whole country, and in any event many cases of food poisoning are not investigated bacteriologically. This survey therefore does not represent the total incidence of food poisoning in England and Wales and the figures differ from those in Reports by the Chief Medical Officer, Ministry of Health, and from other reports.

In all, 3,495 incidents were noted. Salmonella infections accounted for 3,193 (91 per cent.), and of these 67 per cent. were due to *Salm. typhi-murium* and 33 per cent. to other salmonellae. Ninety-one per cent. of the salmonella incidents were said to be sporadic cases. No sporadic cases due to other causes were reported.

The total number of family outbreaks was 134: 126 were due to salmonellae and 8 to staphylococci.

The highest number of incidents was reported in August and the lowest in February. As very little evidence was obtained on the epidemiology of sporadic cases or family outbreaks, further analysis was confined to the 468 outbreaks.

Salm. typhi-murium was responsible for 107 outbreaks (23 per cent.); 67 outbreaks (14 per cent.) were due to other salmonellae, 82 (18 per cent.) to staphylococci, 72 (15 per cent.) to other bacteria, 9 (1·9 per cent.) to chemical agents and 131 (28 per cent.) to undiscovered causes. A proportion of the outbreaks due to unknown causes may not have been fully investigated.

Sixty-one salmonella outbreaks occurred in hospitals, and a proportion of these were due to cross-infection.

The suspected food was mentioned in 191 outbreaks (41 per cent.). Meat, and meat and fish products, were the vehicles of infection in 119 (62 per cent.). Only 3 outbreaks were traced to fresh meat; 10 were due to tinned meat (contaminated after the tin was opened); 100 were due to processed meat or fish, and 6 were due to unclassified meat dishes. Puddings and sweet dishes caused 25 outbreaks, milk 14, duck eggs 8, and dried eggs 4.

The place where infection occurred was noted in 275 outbreaks (59 per cent.). Of these, canteens (including Services canteens and cookhouses) were mentioned in 155 instances (56 per cent.); hospitals and institutions in 77 (28 per cent.); restaurants, hotels and restaurant cars in 30 (11 per cent.), and bakers' shops, butchers' shops and dairies in 13 (5 per cent.).

Probable reservoirs of infection were stated in 33 salmonella and 17 staphylococcal outbreaks. Six of the salmonella outbreaks were thought to have been due to animal sources, 8 to cross-infection, and 19 to symptomless food handlers. These proportions may be misleading. The 17 staphylococcal outbreaks were due to nasal or hand carriers or to food handlers with infected sores. On all eight occasions where phage typing was carried out *Staph. aureus* phage Type 6/47 or serological Type IIIc was identified.

In 29 per cent. of family outbreaks due to salmonellae, symptomless excreters were found among contacts.

Very little information was obtained on salmonella carriers and it was difficult to distinguish carriers from symptomless excreters, but four chronic carriers were reported; two were excreting *Salm. typhi-murium*, one was excreting *Salm. newport*, and one *Salm. thompson*.

Some unusual manifestations of salmonella infections, and of mixed infections, were noted.

The need for research into the exact role of apparently non-pathogenic organisms isolated from suspected foods in large numbers is stressed.

PETZEL, G. (1948.) Bericht ueber eine Fleischvergiftung in einem Krankenhaus. **[An outbreak of meat poisoning in a hospital.]**—*Z. Hyg. InfektKr.* **128** 9-12. [Abst. from abst. in *Bull. Hyg., Lond.* **24.** 889-890. 1949), signed: W. G. SAVAGE.] **1185**

In an epidemic described, *Salmonella typhi-murium* considered to have been the cause was isolated from sausage meat which, however, was unaltered either in taste or smell. For all the cases the source of the meat, eaten either as sausage or chopped-up meat, was from four emergency-slaughtered cattle, killed on June 15th and passed for food. The author considers that the *Salmonella* infection was in the animals before slaughter and was the cause of the emergency killing [particulars however are not given].

MARTORANA, F. (1949.) L'impiego di nuovi ratticidi nelle derattizzazioni sistematiche.

[The use of new compounds for systematic deratization.]—*Ann. San. Pubblica.* **10.** 376-385. [English summray.] [Abst. in *Bull. Hyg., Lond.* **24.** 988. (1949), copied *verbatim*. Signed: H. HAROLD SCOTT.] **1186**

Three compounds were first tested and the results noted. They were: Zinc phosphide 5 per cent., arsenious anhydride 10 per cent., and fluoracetate of sodium. Though very efficacious these are toxic for man and for domestic animals. The author then tested a new compound, Alphanaphthylthiourea (ANTU). Richter of Baltimore had recorded good results with this when it was mixed in a proportion of 1 per cent. with maize flour. ANTU is a dark grey powder, insoluble in water, non-irritating to the skin. To man and domestic animals it is only slightly toxic and, an additional safeguard, it causes vomiting. Yet further, it is best used with food acceptable to rats but not taken by man. Such is dried carob and the ANTU is mixed with this in a proportion of 2 per cent. The rodents devoured it greedily and died a few hours later, even if only a small quantity had been taken. The carob is produced widely in Italy, is cheap, is liked by rats, is easily mixed with the poison and its sweet taste serves to mask the slight bitterness of the ANTU.

Rattus norvegicus was caught in large numbers in traps; then kept for 48 hours in case any died perhaps from other poison picked up. They were then given the ANTU, 2 per cent. in carob powder. In about two hours the rats lost vitality and in four to six hours died. Autopsy showed marked pulmonary oedema and slight inflammation of the adrenals. ANTU proves fatal also if the animal's paws are contaminated by it and they rub their paws on their mouths and faces. If carob powder is not available, talcum is a good substitute.

ADÁMAT, S., & NIŽNÁNSKY, F. (1950.) Zpráva o návšteve serologických ústavov v Budapešti. **[Report on Hungarian serological institutes.]**—*Čas. československ. Vet.* **5.** 52-55. **1187**

The methods used in three serum institutes in Budapest for the production of swine fever and dog distemper vaccines, antiserum and culture vaccine for swine erysipelas and a vaccine for simultaneous immunization against swine fever and swine erysipelas are described. —E.G.

See also abstr. **955-956** (*S. typhi-murium* in eggs); **1224** (U.S.S.R. academy of agriculture); **1228** (report, dairy research, Gt. Britain).

LIVESTOCK HYGIENE

COATON, M. G. H. (1946.) **The Harvester-Termite problem in South Africa.**—*Bull. Dep. Agric. Un. S. Afr.* No. 292. pp. 38. Pretoria: Govt. Printer. **1188**

Sodium arsenite mixed with grass as bait has been found to be satisfactory for eradicating the harvester termites, but is also poisonous to livestock. Methods of preventing loss of livestock are discussed, and it is concluded that the only safe method lies in preventing stock from gaining access to treated areas until heavy rains have fallen.—G. B. S. HEATH.

See also abstr. **1067** (nutritive value of woody plants); **1155** (disinfection of air); **1246** (book for horse owners).

REPRODUCTION AND REPRODUCTIVE DISORDERS

CASSOU, R. (1950.) Nouvelle technique d'insémination artificielle. **[A new technique for artificial insemination.]**—*C. R. Soc. Biol., Paris.* **144.** 486-487. **1189**

C. had been impressed by the convenience of the Danish method of insemination, using gelatinized semen from an instrument of the "balling-gun" pattern, but had convinced himself that the original technique seriously reduced longevity. C.'s modification involves the use of a plug of polyvinyl alcohol powder retained between cotton wool, half-way up a drinking straw. Semen diluted with egg-yolk citrate is sucked up into contact with the powder, which is thereupon transformed into a jelly impermeable to air, gases, and liquids. The distal end is then sealed by the insertion of more alcoholic powder. The filled straws are cooled in ice water and carried surrounded by this medium in a thermos flask. Numerous advantages are claimed besides that of semen longevity equal to that of the standard technique. Tried out against this, C.'s method gave on 220 cows a conception rate of 59·6% whereas the control rate was only 56·7% on 878 cows.

—F. L. M. DAWSON.

BONADONNA, T. (1950.) Anwendung und Resultate der künstlichen Besamung bei jungfräulichen Kalbinnen. **[Artificial insemination in maiden heifers.]**—*Wien tierärztl. Mschr.* **37.** 513-515. [Author's summary copied *verbatim*.] **1190**

The conception rate obtained in maiden

heifers artificially inseminated is as high, or even higher, than that obtained in adult cows, provided the operator is sufficiently trained and skilled. Following first insemination the average conception rate obtained (as ascertained by rectal diagnosis) was 51·8% in maiden heifers and 50% in adult cows. The average conception rate for all inseminations was 81·5% in maiden heifers, and 74·3% in adult cows. The latter required an average of 2 inseminations for pregnancy, while maiden heifers required only 1·5 inseminations.

PALSSON, E. (1948.) Betydelsen av sexuell hälsokontroll inom den artificiella inseminationen. **[The control of sexual health in artificial insemination.]**—*Svensk VetTidskr.* **53.** 140-153. [English summary.] **1191**

In Sweden, the artificial insemination service includes a complete sexual health control, pregnancy diagnosis and treatment for sterility. The organization of the work at Ystad in Malmöhus county was described. Pregnancy diagnosis is made regularly, free of charge, and for sterility treatment an extra charge of 5 kronor (the same as the charge for insemination) is made only after the fifth treatment, card records being kept for each treatment. 7·5% of the total number of cattle were treated before the first oestrus; in 7·3% of cases pregnancy diagnosis gave negative results and oestrus had to be induced. Other treatment for sterility was given to 17·4% of the total number of cows, before insemination in less than half the cases. 5·8% of cows were slaughtered on account of sterility.

P. considered that the eighth week was generally the best time for pregnancy diagnosis. Early abortion occurred in 0·6% of cases. Expression of the corpus luteum was sometimes followed by haemorrhage, fatal in five cases. P. considers this treatment to be contra-indicated when cows are being fed beet tops or simultaneously being treated with stilboestrol. Risk of the spread of endometritis by carrying out artificial insemination in badly infected cowsheds was also discussed.—F.E.W.

SOBEK, V. (1950.) Umělá inseminace jako methoda prevence venerických nákaz i sterility a některé způsoby evidence zdravotního stavu býků. **[Artificial insemination in the prevention of sterility and venereal diseases in cattle and testing of bulls.]**—*Čas. československ. Vet.* **5.** 225-230. **1192**

Prevention of trichomoniasis and other venereal diseases of cattle by artificial insemination is discussed. Keeping of exact records is essential. Bulls are suspected if their fertility index is lower than 50% and if more than 30% of the cows require a second insemination. A transmission test for the detection of infected bulls is described in which the semen of each of 18 suspected bulls (from an infected district) was introduced into the vagina of maiden heifers, producing in each case distinct lesions in the mucosa. Later it was found that only nine of the tested bulls had noticeable changes in the seminal vesicles and testes, although from the result of the test it was evident that all 18 were infected. *Trichomonas* was recovered from sheath washings from four other bulls of the 18 although clinically they appeared healthy. Tests of healthy controls were negative.—E.G.

SOBEK, V. (1950.) Poznámky k hodnocení biologické zkoušky při detekci pohlavních nákaz. **[Diagnostic tests in bovine venereal diseases.]**—*Čas. československ. Vet.* **5.** 369-370. **1193**

A general discussion on the importance of semen tests for the detection of bulls spreading venereal infections, in relation to animal production and state economy.—E.G.

FOOTE, R. H., & BRATTON, R. W. (1950.) **Motility of bovine spermatozoa and control of bacteria at 5 and 25°C in extenders containing sulfanilamide, penicillin, streptomycin and polymyxin.**—*J. Dairy Sci.* **33.** 842-846. [Authors' summary slightly modified.] **1194**

The feasibility of storing bovine semen at 25°C. for use in artificial insemination to eliminate the expense of refrigerating the semen at 5°C. was investigated. Sulfanilamide, penicillin, streptomycin, polymyxin and a combination of these were added to 3·6 per cent citrate-yolk extender. The citrate-yolk extender containing no sulfanilamide or antibiotics served as the control. Eighteen semen samples were stored in each of the six extenders at 5°C. and at 25°C. The percentage of motile spermatozoa after 24 hr. of storage was lower when the semen was stored at 25°C. than when it was stored at 5°C. except in the extender containing the combination of antibacterial agents. In nearly all samples, this combination of sulfanilamide and antibiotics completely inhibited bacterial growth at both temperatures. This combination of antibacterial agents gives promise of making possible the development of an extender for bovine semen which will not require refrigeration.

MATA, E. G. (1949.) Relación entre las características del semen y la capacidad de los

reproductores. **[Semen characters and fertility.]**—*Bol. Fac. Agron. Vet. Univ. B. Aires.* No. 26. pp. 55. **1195**

A knowledge of the composition of the spermatic fluid and the morphology of the spermatozoa enables a sire's fertility to be estimated and the probable cause of abnormalities to be diagnosed. A bull or ram may have up to 20% abnormal spermatozoa, but still be fertile, while in a stallion the abnormalities may reach 30% without affecting fertility. The commonest cause of infertility is abnormality of the "capsule", which not only protects the spermatozoon against injury, but enables it to penetrate the ovum. Such abnormalities are produced by lesions in the epididymis or the vas deferens. Twisted tails are produced by lesions in the seminal vesicles. Abnormal necks and heads are produced by testicular lesions, usually bacterial in origin. The acidity of the secretions of the accessory glands may be abnormal, especially in cattle, as a result of infection with *Brucella abortus*.—R. MACGREGOR.

BUSH, L. J., LUDWICK, T. M., FERGUSON, L. C., & ELY, F. (1950.) **The effect of bacteria on the fertility of bovine semen.**—*J. Dairy Sci.* **33.** 633-638. [Authors' summary and conclusions slightly modified.] **1196**

A significant relationship was found between the number of bacteria in diluted semen and its fertility when all types of bacteria were considered. A significant relationship was found between the types of bacteria predominating in the diluted semen and its fertility. Types such as *Corynebacterium, Micrococcus, Streptococcus* and *Diplococcus* species and especially *Pseudomonas pyocyanea* tend to have an adverse effect on conception rate, whereas the enteric organisms encountered had no such effect. No relationship was found between either the number of bacteria or types of bacteria predominating in diluted semen and the average length of the estrus cycle following insemination.

JOHNSTON, J. E., & MIXNER, J. P. (1950.) **Relationship of hyaluronidase concentration to fertility of dairy bull semen.**—*J. Dairy Sci.* **33.** 847-850. [Authors' summary and conclusions copied *verbatim*.] **1197**

The possibility that hyaluronidase is a critical factor in the fertility of dairy bull semen was investigated. One hundred and eighty-seven semen samples were collected from 24 dairy bulls. Hyaluronidase assays on seminal plasma were made initially and after 24 hr. of incubation at 37°C. under toluene on all samples. Semen samples were classified for to the number of first- and second-service cows bred per sample: (a) 10 to 19 cows bred; (b) 20 or more cows bred; and (c) total of *a* and *b*. statistical analysis into three groups according Coefficients of correlation were obtained between fertility estimates and hyaluronidase concentrations in each group on a "total", "between bull" and "within bull" basis. None of these coefficients of correlation attained statistical significance. From these results it seems doubtful if any significant relationship exists between the hyaluronidase and fertility levels of semen from bulls of relatively high fertility when the semen is diluted at a rate of 1 to 100 or less.

LABATUT, M. (1948.) La stérilité des grandes femelles domestiques. Facteurs étiologiques, traitement chirurgical, hormonal et vitaminique (vitamine E). **[Sterility in farm animals. Causation and treatment.]**—*Rev. Path. comp.* **48.** 646-657. [English summary.] **1198**

Causes of sterility in cows and mares and financial losses incurred thereby are discussed. Where sterility is not of bacterial or protozoan origin or caused by malformations in the genital apparatus, L. recommends vitamin E therapy, together with utero-ovarian massage, enucleation of persistent corpora lutea, puncture of ovarian cysts and hormone therapy.—E.G.

SÖDERGREN L. O. (1947.) Ett bidrag till sterilitetsbekämpandet hos nötkreatur. **[Control of sterility in cattle.]**—*Svensk Vet-Tidskr.* **52.** 115-129. **1199**

Sterility resulting from nutritional deficiencies tends to occur in Sweden among heifers and young cows during the latter half of the winter stall-feeding period, when young stock are not given mineral and vitamin supplements.

S. gave histories of 39 such cases, many of which were refractory to other treatments and all of which had been anoestrous for a long period after calving. They were given an 18-day course of a proprietary vitamin E preparation containing also some NaCl, the dosage being 0·05 g. of synthetic α-tocopherol acetate daily, given mixed with concentrate fodder. 34 of them became pregnant to insemination following this treatment before they were put out to pasture, three became pregnant after some time at pasture, the remaining two being slaughtered without any attempt at insemination. All came into oestrus shortly after treatment commenced.

S. considered that these results would justify field experiments and also the determination of a possible enhancement of the

vitamin E content of the blood serum by *per os* treatment.—F.E.W.

BATES, R. W., & LOWRY, C. (1950.) **Effect of particle size of suspensions of estrogen crystals on duration of estrus.**—*Proc. Soc. exp. Biol., N.Y.* **73.** 576-581. [Authors' summary copied *verbatim.*] **1200**

The duration of effectiveness of a single injection of aqueous suspensions of a crystalline ketonic estrogen preparation of 60, 100, 200 and 325 mesh particle size was compared with that of an oil solution of the same preparation. The dosages of the suspensions were varied from 50 I.U. to 2,000 I.U. Uterine weight or estrus smear were used as the criteria of effectiveness of the estrogens. 800 rats were used in the vaginal smear studies.

With the larger sized particles (60 and 100 mesh) 100 I.U. were as effective as 10,000 I.U. in oil solution. When the dosage level of 400 I.U. was used, estrus was maintained in 50% of the rats for 19 days with 60 mesh particles, 14 days with 100 mesh particles, 8 days with 200 mesh particles and 5–6 days with 325 mesh particles. Further increase in dosage levels up to 2,000 I.U. did not increase the duration of the estrus. This indicates the primary importance of particle size with this estrogen in controlling the duration of its effectiveness.

HANCOCK, J. (1950.) **Studies in monozygotic cattle twins. I. Organization of twin collection.**—*N.Z. J. Sci. Tech.* **30.** 257-270. [Part of author's summary copied *verbatim.*] **1201**

The organization of twin collection work at the Ruakura Animal Research Station is described. In five years, 1944-8 a total of 222 sets of monozygotic twins have been located. This annual number of 40–50 sets is adequate to justify large scale use of monozygotic twins for experimental studies. Methods of calculation of frequency of monozygotic twinning are described with reference to data of Johansson and Bonnier. Frequency rates are shown to be of major importance in twin collection work.

The relation of distance, sex, collection methods, and year to the ratio of monozygotic twins in the inspected sample of cattle twins is discussed, in view of the usefulness of such data to workers attempting twin collection.

See also absts. **940** (hereditary resistance against swine erysipelas); **957** (brucellosis transmitted by artificial insemination); **999** (*Trichomonas foetus* in preputial fluid of bulls); **1063** (sex hormones and leucaemia); **1140** (cannibalism in oestrogen-treated cockerels); **1171** (testis); **1202** (tropical climate and sexual activity).

ZOOTECHNY

CURASSON, G. (1949.) Les climats chauds et l'activité sexuelle. [**Tropical climates and sexual activity.**]—*Rev. Élev. Méd. vét. Pays trop.* **3.** 139-145. **1202**

Excessive heat causes a degeneration of the seminiferous tubules and the production of abnormal spermatozoa, notably many without heads. The temperature of the testes is regulated by the raising and lowering action of the dartos and in hot climates this control of testicular temperature can be assisted by shaving the scrotum and hind quarters. The regulation of testicular temperature is a function of thyroxin, and can be improved by the administration of thyroid extract. Females are also adversely affected by heat, but the actual cause is not clear. Light also affects sexual activity in both sexes, through an action of the optic nerves on the anterior pituitary. As a whole, these factors influence animals of European breeds more than those of tropical breeds.

—R. MACGREGOR.

ANON. (1949.) [**The three-year plan for stock improvement.**]—*Veterinariya, Moscow.* **26.** No. 9. pp. 1-4. **1203**

Over the three-year period 1949-1951 the number of cattle was to be increased by 50%, sheep by 80% and pigs by 350%. The reproduction rate was much too low. There was great need for better hygiene, disease prevention and general management of stock, especially in winter. The veterinarians, not the farm personnel, will be held responsible for the fulfilment of this "plan".

Statistics show that for the year July 1948–June 1949 increase of cattle on collective farms amounted to 20%, sheep and goats to 11% and pigs to 79%; on state farms increases of breed stock were respectively 16%, 17% and 52%.—F.A.A.

RHOAD, A. O. (1949.) **The Santa Gertrudis breed. The genesis and genetics of a new breed of beef cattle.**—*J. Hered.* **40.** 115-126. [Author's summary copied *verbatim.*] **1204**

The Santa Gertrudis breed of beef cattle originated through the necessity of finding a beef type animal which was better suited to the climatic and range conditions of South Texas. It is the first distinctive American

breed of cattle. The breed was developed through a plan set up and supervised by Robert J. Kleberg, Jr., manager and part owner of the King Ranch, Texas.

The Santa Gertrudis breed is the result of a species cross of *Bos indicus* males × *Bos taurus* females. The former is represented by the American type Brahman and the latter by the pure-bred beef-type Shorthorn. The breed was developed from the first cross generation but because the Brahman bulls used were three-fourths to seven-eighths *Bos indicus*, the breed is considered as three-eighths Brahman and five-eighths Shorthorn.

Several distinct periods are recognized in the development of the breed. 1910 to 1918 was an exploratory period when a half-bred Brahman-Shorthorn bull was placed with a herd of Shorthorns and the performance of his offspring compared with the straight-bred Shorthorn and Hereford cattle under range conditions. Because the performance of the Brahman-Shorthorns was superior to the other cattle, the cross breeding program was extended in 1918 to include all pure-bred Shorthorns on the ranch. A program of selection for beef type and red color was initiated within the Brahman-Shorthorn. The object was the development of a new breed from their progeny.

Early in the augmented crossbreeding program a Brahman bull named Vinotero showing Guzerat, Nellore and some Sind characteristics sired, out of a one-sixteenth Brahman cow, a red bull calf. This was to mark the real beginning of the breed. This outstanding bull became known as Monkey. A program of close-breeding and linebreeding to Monkey and his offspring was initiated and has continued to the present. To facilitate this program a unique system of single-sire and multiple-sire herds was set up. This contributed greatly to the rapid establishment of the breed. The Santa Gertrudis, named from the Santa Gertrudis division of the King Ranch, was officially recognized as a new and distinct breed in 1940.

MARSBOOM, R. (1950.) De Buffel en zijn economische betekenis voor Belgisch-Congo. **[The economic importance of the buffalo in the Belgian Congo.]**—*Bull. agric. Congo belge.* **41.** 773-792. [Abst. from French summary.] **1205**

African buffaloes consist of black species found in the grass areas and red species found in the forests, and several varieties of each occur in the Congo. They live in herds near water or mud, and are only dangerous when solitary. All efforts to domesticate them have failed, so attempts should be made to introduce Mediterranean breeds. African buffaloes are susceptible to *Pasteurella bubaliseptica* infection and to rinderpest. Their worst disadvantage is their tendency to act as reservoirs for diseases. Buffalo meat is inferior to ox beef, but the milk is superior for many purposes and they are stronger than working oxen. They are still essential for the cultivation of rice swamp which cannot, as yet, be done mechanically. It remains therefore to be seen if the Mediterranean breeds can be adapted to the climate of the Congo.—R. MACGREGOR.

FOOT, F. H., FOOT, A. S., HENRIQUES, E., & NEAVE, F. K. (1950.) **Experiments on milking technique. 7. The effect of subjecting dairy cows, for a complete lactation, to a rigid control of the duration of milking.**—*J. Dairy Res.* **17.** 107-116. [Authors' summary copied *verbatim*.] **1206**

Thirty-eight first-calf heifers in two equal groups were subjected for complete lactations to a rigid control of the duration of milking to either 4 or 8 min. The treatment had no major effect on the milking rates of either group. Whilst 4 min. was insufficient time to milk out completely the udders of about half the animals on this treatment, the machines on the 8 min. treatment were generally left on for a period after milk flow had stopped. There was no significant difference between the 305-day lactation yields of the two groups or in the persistency. The 4 min. treatment did, however, decrease the yield of milk and fat in early lactation. The 8 min. cows had more clinical and subclinical mastitis, though they did not have a higher proportion of eroded teats nor higher Whiteside test readings.

Teat erosion appeared to be correlated with slow milking.

BAXTER, E. S., CLARKE, P. M., DODD, F. H., & FOOT, A. S. (1950.) **Factors affecting the rate of machine milking.**—*J. Dairy Res.* **17.** 117-127. [Authors' summary copied *verbatim*.] **1207**

A study was made of the milking of the two hind quarters of four cows by teat cup and by teat cannula at three levels of vacuum and by teat cannula at atmospheric pressure. The eight quarters milked at significantly different maximum rates by teat cup but at nearly the same rate through a teat cannula, suggesting that the teat orifice is a very important factor controlling the rate of milking. The maximum

rate of milking by both teat cup and teat cannula increased with increasing level of vacuum from 11 to 20 in. Hg. The rate of increase in the teat-cup milking was greater than in the cannula milking, suggesting that the teat orifice was stretched open at the higher levels of vacuum.

The average amount of strippings increased at the higher level of vacuum in teat-cup milking, due apparently to teat-cup crawl.

See also absts. **1068** (diet of sheep and environmental temperature **1069** (food of goats in semi-arid areas); **1093-1098** (panting and climate); **1156** (heat regulation in sheep); **1242** (book, sheep management); **1246** (book, notes for horse owners).

TECHNIQUE AND APPARATUS

WEILAND. (1949.) Zur Verbesserung des Tukerkelbazillennachweises im bakteriologischen Laboratorium. [**On improvement in the demonstration of the tubercle bacillus in the bacteriological laboratory.**]—*Med. Klinik.* **41.** 312-314. [Abst. from abst. in *Bull. Hyg., Lond.* **24.** 853. (1949.) Signed: S. ROODHOUSE GLOYNE.] **1208**

W. described the results obtained for the demonstration of tubercle bacilli in material from cases, using a special high-speed centrifuge, the Ecco Ultima I, which has a speed of 10,000 revolutions per minute compared with that of 2,000–3,000 of the ordinary laboratory machine; sediment was then cultured. A series of 200 urine specimens was also examined but controls were not always available. Earlier and better results were obtained with the high-speed centrifuge than with the ordinary machine.

WEILAND, P. (1948.) Säurefeste Bacillen in Hühnereiern. (Eine mögliche Fehlerquelle bei der Tuberkelbacillenzüchtung auf Eiernährböden.) [**Acid-fast bacilli in hen eggs. (A possible fallacy in culture of tubercle bacilli in egg media.)**]—*Z. Hyg. InfektKr.* **127.** 521-525. [Abst. in *Bull. Hyg., Lond.* **24.** 701-702. (1949), copied *verbatim*. Signed: P. A. CLEARKIN.] **1209**

The success of cultural methods for isolation of the tubercle bacillus is dependent on the freshness of the eggs used in preparation of the media. During the war fresh eggs were difficult to obtain in Germany and in consequence cold storage eggs were used with surprising results. The number of positive findings from microscopical examination of smears made from the surface of the medium was unusually large, so much so as to arouse a suspicion that the acid-fast bacilli were derived from the medium. A total of 1,480 tubes of media made from cold-storage eggs after various formulae (Petragnani and Hohn) were examined by taking smears from the surface and from the depth of the medium for microscopical examination. In 562 of the media, roughly 38 pre cent., acid-fact bacilli were observed both on the surface and in the depth smears. Another series of media made from fresh eggs was examined and similar acid-fast bacilli were found though in smaller numbers. Petragnani media made from cold-storage eggs gave 58 per cent. positive and from fresh eggs 17 per cent. positive results. Subcultures and animal inoculation were negative, proving that the medium had been well sterilized.

The frequency of acid-fast bacilli in 28 fresh hen eggs was next investigated. Each egg was shaken up with 3 per cent. antiformin, centrifuged at 10,000 revolutions and inoculated on 5 Petragnani slopes and one maltose agar plate. The latter was incubated for 48 hours (for growth of non-pathogenic acid-fast organisms) and the Petragnani media for eight weeks at 37°C. Slide preparations taken from each of the eggs for direct microscopical examination showed acid-fast bacilli in twelve (42·7 per cent.). On maltose agar plates from two of the eggs a single tiny colony consisting of acid-fast bacilli was discovered. One of them was obtained from an egg in which no bacilli had been observed in the direct smears so the total positive findings were increased to 13 (46·3 per cent.). There was no growth on any of the other media. The author's conclusions are (1) Acid-fast bacilli are present in a large percentage of hen eggs. This finding is in striking contrast with the findings of earlier investigators and is due to better technique, and especially to use of a high-speed centrifuge. (2) Growth on maltose agar showed that some, at least, of the acid-fast bacilli were non-pathogenic. The others are probably non-pathogenic. They cannot be identified as tubercle bacilli without further investigation by culture and animal experiment. (3) The acid-fast bacilli found by miscroscopical examination of nutrient media made from eggs are derived from the eggs. Diagnosis by examination of microscopical preparations made by scraping the surface before colonies or other macroscopic growth is observed may result in faulty diagnosis. On the other hand, the presence of a few acid-fast bacilli in the medium does not interfere with diagnosis of tubercle bacilli.

The "egg bacilli" are killed by sterilization of the medium and growth of tubercle bacilli from inoculation material is not inhibited.

STARKEY, H., & AUBERT, E. (1950.) **The use of tri-sodium phosphate in techniques for the isolation of** *M. tuberculosis*.—*Canad. J. publ. Hlth.* **41.** 27-30. [Authors' summary slightly modified.] **1210**

The authors consider that tri-sodium phosphate has the following advantages over NaOH for sputum concentrations: It is less toxic and does not tie technicians down to a short period of shaking. It is rather better for liquefying tenacious mucus. It is better than NaOH for destroying undesirable "contaminants".

In respect to the use of tri-sodium phosphate for gastric lavages, they consider that it eliminates most of the toxic effect of gastric secretion on *M. tuberculosis*, it liquefies whatever mucus is present, and it eliminates the occasional "contaminant".

HENRIKSEN, S. D. (1950.) **A comparison of the phenylpyruvic acid reaction and the urease test in the differentiation of** *Proteus* **from other enteric organisms.**—*J. Bact.* **60.** 225-231. [Author's summary copied *verbatim*.] **1211**

The faculty of rapid transformation of phenylalanine into phenylpyruvic acid nearly always coincides with strong urease activity and is practically limited to members of the *Proteus* group. A simple routine test for the detection of phenylpyruvic acid production is described. The specificity and sensitivity of the test are equal to, and in rare cases superior to, those of the urease test.

STUART, R. D. (1948.) **The value of liquoid for blood culture.**—*J. clin. Path.* **1.** 311-314. [Abst. in *Bull. Hyg., Lond.* **24.** 229. (1949), copied *verbatim*. Signed: J. C. CRUICKSHANK.] **1212**

Liquoid (Hoffman-La Roche) is sodium polyanethol sulphonate. It is a powerful anticoagulant and destroys the bactericidal power of the blood. It has been shown experimentally and in routine work to be valuable for blood culture. In the present paper the results are compared of cultures made by taking 5 ml. of blood into about 100 ml. of boiled blood broth and into 1 ml. of 0·3 per cent. liquoid: subcultures were made at 24 hours and at later times from the broth to blood agar, and from the blood-liquoid to blood agar and, in 0·5 ml. quantities, to nutrient broth and thioglycollate broth. Of 816 cultures 170, from 141 patients, were positive: of these, 12 were positive only from the boiled blood broth and 18 only from the liquoid-blood. Seventeen different bacterial species were isolated.

The conclusion is that liquoid is a satisfactory vehicle in which blood for culture may be transported to the laboratory, and that the technique described will allow successful isolation of most organisms, aerobic and anaerobic, likely to be encountered in hospital practice. Additional advantages were that degrees of bacteraemia could be estimated by dispersing measured amounts in poured plates, and that the blood plasma obtained by centrifuging or allowing the blood-liquoid to stand, could be used for agglutination tests. Venules containing 1 ml. of 0·3 per cent. liquoid are available for use in general practice.

RAUBITSCHEK, F., & SAGHER, F. (1948.) **Hanging-drop preparation as a routine method for culturing material from fungous diseases.**—*Acta Med. Orient.* **7.** 213-216. [Abst. in *Bull. Hyg., Lond.* **24.** 710. (1949), copied *verbatim*. Signed: G. C. AINSWORTH.] **1213**

After giving detailed instructions for preparing hanging-drop cultures in van Tieghem cells, the results are compared of the routine use of this technique (4 per cent. maltose broth being used) with culture on slants of Sabouraud's 4 per cent. maltose agar.

The material consisted of 309 specimens of hair, skin scales, and nails. Microscopic examination for fungi was positive for 279 and the cultural results by either or both methods were positive for 116. The hanging-drop method (95 positive results) was not significantly superior to the slant method (88 positive results) but as it frequently permitted an earlier identification of the pathogen to be made the authors recommend the technique as a complementary routine culture method for mycotic material.

LAJTHA, L. G. (1950.) **The direct observation of cells** *in vitro*.—*Quart. J. micr. Sci.* **91.** 107-108. **1214**

The apparatus consists of a special viewing chamber and an inverted phase contrast microscope. The chamber, of chromium-plated metal, is 3 cm. square × 1·5 mm. thick, with a central circular hole 2·0 cm. in diameter. When this latter is sealed on both surfaces by cover slips mounted on paraffin wax, the chamber is completely closed save for two fine conduits perforating one side of the square. Using a fine-gauge needle the chamber is filled

through one of these, then both are sealed with paraffin. After 5–15 min. the cells sediment and the culture is ready for observation. As the cells are then lying on the floor of the chamber, an inverted microscope has to be used if high power examination is desired. An angle ocular is then essential.—L. M. MARKSON.

LAZAROW, A. (1950.) **A universal syringe buret and its use in microcolorimetric analysis.**—*J. Lab. clin. Med.* **35.** 810-814. [Author's summary slightly modified.] **1215**

A syringe buret is described which has the following advantages: (a) Readings are made on a dial indicator gauge. (b) The use of mercury is avoided and the cleaning of the buret is therefore greatly simplified. (c) The syringes may be rapidly replaced, and a wide variety of sizes may be used ranging from a 0·25 ml. tuberculin to a 10 ml. syringe. (d) Syringes of preselected diameters are used so that the scale divisions correspond to an even number of microliters. The syringe is admirably suited for microcolorimetric analyses.

SPENCER, A. G. (1950.) **Flame Photometry.**—*Lancet.* **259.** 623-627. [Author's summary copied *verbatim.*] **1216**

The principles, design, and operation of a combined direct and internal standard flame photometer are described. Some of the many possible sources of error in flame photometry are discussed together with the methods for avoiding them. Flame photometry is an accurate and rapid technique for estimating the concentration of sodium and potassium in aqueous solutions or in plasma or other complex biological fluids, and is a great convenience in clinical medicine, paediatrics, and surgery. Despite the apparent simplicity of the method it is unsuitable for the use of unskilled or uncritical workers.

HELLERSTEIN, H. K., & LIEBOW, I. M. (1950.) **Control of heart rate with an intracardiac thermode.**—*J. Lab. clin. Med.* **35.** 703-707. [Authors' summary copied *verbatim.*] **1217**

A special intracardiac thermode for use in the intact animal or man is described. Results obtained in the dog by perfusion of warm and cold water through this thermode placed in the approximate region of the S-A [sino-atrial] node are summarized.

GREEN, H. D., DENISON, A. B., JR., FRANKLIN, L., & WAYNE, H. (1950.) **A system composed of a pump, outflow meter, and oxygenator capable of perfusing an organ at either a constant head of pressure or a constant rate of blood flow, regardless of changes in flow resistance in the organ.**—*J. Lab. clin. Med.* **36.** 485-493. [Authors' summary copied *verbatim.*] **1218**

A perfusion schema is described by which an isolated organ may be perfused sterilely by oxygenated blood, using either constant or pulsatile pressure. The venous outflow is measured with a modified Gaddum-type recorder using ink recording. Blood viscosity is also simultaneously and continuously recorded by a similar flowmeter system. With this system organs have been perfused and flow recorded continuously for as long as thirty-six hours. The system can be modified so as to perfuse the organ at a constant rate of flow, the perfusion pressure being automatically adjusted to compensate for changes in resistance to flow or increased viscosity.

SKEGGS, L. T., JR., LEONARDS, J. R., HEISLER, C., & KAHN, J. R. (1950.) **Artificial kidney. III. Elimination of vasodepressor effects due to cellophane.**—*J. Lab. clin. Med.* **36.** 272-275. [Authors' summary copied *verbatim.*] **1219**

The use of an artificial kidney in dogs frequently resulted in reactions consisting of vomiting, shivering, diarrhea, and a prolonged fall in blood pressure. These reactions appeared to be due to the contact of the dog's blood with the cellophane. Aqueous extracts of cellophane were prepared which produced similar reactions when injected intravenously into dogs. These hypotensive substances could be removed from the cellophane by extraction with boiling water for twelve to fifteen hours. The use of such treated cellophane in the artificial kidney almost completely eliminated undesirable reactions in the dog during dialysis.

DERN, R. J., & PULLMAN, T. N. (1950.) **The accuracy, precision, and utility of the syringe as a pipetting device.**—*J. Lab. clin. Med.* **36.** 494-500. [Authors' summary copied *verbatim.*] **1220**

Several syringes, two of which are commercially available, delivering volumes from 0·2 to 7·0 ml. have been studied. These have the following advantages over the conventional pipette: (1) greater accuracy, (2) adaptability to other than integral volumes, (3) less dependence upon meticulous technique for precision, (4) speed of operation, (5) adaptability to fluids of widely differing viscosities and surface tensions, (6) freedom from necessity of contact between pipette and fluid surface or vessel wall

to insure constancy of delivery volume, (7) constancy of volume over a wide range of temperatures. Under certain experimental conditions, a single syringe can be used as an aliquot transfer pipette for a series of different solutions.

See also absts. **925** (isolation of tubercle bacilli from sputum); **926** (egg-yolk medium for tubercle bacilli); **1046** (phase-contrast microscopy of *Schistosoma mansoni*); **1062** (X-ray diagnosis of mammary tumours in mice); **1111** (liver biopsy); **1189** (artificial insemination); **1206** (milking technique); **1207** (machine milking).

MISCELLANEOUS

NEMEČEK, V. (1950.) Spolupráce humánní a veterinární chirurgie. [**Collaboration in human and veterinary surgery.**] — *Čas. československ. Vet.* **5.** 80-81. **1221**

A case is described whereby the surgeon of a hospital approached a veterinarian to supply the parathyroid gland of a calf for implantation into a woman patient suffering from continuous severe attacks of tetany. A calf about two weeks old was killed, the parathyroid was extirpated, put into a thermostat and sent by ambulance to the 15 km. distant hospital. The implantation was said to be successful and the result satisfactory. Over a period of three months after the operation the woman had only three further very mild attacks.—E.G.

CRONKITE, E. P. (1949.) **The clinical manifestations of acute radiation illness in goats. Comments on therapy.**—*U.S. Nav. Med. Bull.* **49.** 199-215. [Abst. in *Bull. Hyg., Lond.* **24.** 672-673. (1949), copied *verbatim*. Signed: S. RUSS.] **1222**

The author gives a detailed description of some of the Bikini tests of sudden gamma radiation upon goats. He groups them according to the body dosage received.

Group 1—(8 animals). Dosage of radiation greater than 1,000 r. Group 2—(8 animals). Dose of radiation approximately 1,000 r. Group 3—(6 animals). Dose less than 1,000 r but greater than 100 r. Group 4—(9 animals). Dose 100 r.

In all cases the doses of radiation were received within a few seconds. The symptoms were in the order of severity that would be expected from the range of dose and in their times of appearance. Actually the animals in Group 1 all died before some of the clinical manifestations, *e.g.*, epilation, had time to appear.

The chief interest of the paper is the account given of attempts to offset the effects of radiation by injections of penicillin and transfusions of whole blood, but the results of these forms of therapy were not such as to allow the author to maintain that they were of definite value. The clinical picture in goats exposed to atomic radiation is similar to that of man except for the absence of vomiting and for the more rapid progression of signs of damage.

ANON. (1949.) **Care of the dog used in medical research.**—*Publ. Hlth Rep., Wash.* Suppl. No. 211. pp. 14. **1223**

This brochure has been drawn up by the Surgery Study Section of the U.S. National Institute of Health. The committee responsible included three veterinarians. It is stated that "An institution should give research dogs even better care than is received by pet dogs", and that it will be implicit in the granting of funds for research involving dogs that the recipient institution and the principal investigator involved shall ". . . provide these standards of care for dogs, and that the standards will be maintained as long as the grant is in force".

It is emphasized that all dogs should be obtained from reputable sources. Breeding of stocks is regarded as the ideal method, but is expensive. The procurement of dogs from municipal pounds is discussed, and the Michigan State Law, which makes this procedure possible, is set out. Dealers are regarded as expensive and uncertain sources of supply.

There are notes on breed in relation to suitability for experimental work. While some investigators favour Beagles, others believe that they do not possess the stamina for repeated or severe experimentation: their loose neck tissues and delicate veins are said to preclude their use for repeated venipunctures. Among short haired breeds the white Bull Terrier is regarded as the ideal animal, having great stamina, a strong heart, and strong blood vessels and neck tissues, open air passages well suited for the demands of cardiovascular experimentation and other chest operations, great resistance to infections. The food requirements of the breed are, however, high, and they are inclined to fight. The Dalmatian is said to possess less stamina, but is quieter and more easily handled, and a Dalmatian-Bull Terrier cross is regarded as the best all-purpose dog. The standard breeds of hunting hounds are believed to have desirable qualities, including strength and stamina, resistance to disease, short hair, a large chest cavity, mild temper and adaptability.

General notes are provided upon care and handling, living quarters, and feeding.

—ALASTAIR N. WORDEN.

ALIKAEV, V. A. (1949.) **[29th plenary session of the U.S.S.R. Academy of Agricultural Science, Veterinary Section.]**—*Veterinariya, Moscow.* **26.** No. 8. pp. 9-14. **1224**

The objects of the meeting were to assess the results of scientific work done in the U.S.S.R. generally and to plan its future course. A number of papers were read on livestock hygiene, on the correct feeding of livestock, on care and maintenance, housing, the importance of disease prevention and on factors bearing on the incidence of disease. Resolutions passed were: (1) that the achievements in the realm of animal health in the U.S.S.R. should be put on record; (2) that defects in research work and teaching should be recorded; (3) that problems arising from the three-year animal husbandry plan should be solved; (4) that there should be a substantial increase in the number of veterinary laboratories and research institutions; (5) that research work in veterinary colleges should be speeded up; (6) that the total teaching time be increased; (7) that the latest soviet achievements in veterinary science should be included in the veterinary curriculum; (8) that zootechny should not be taught in veterinary colleges as a subject before the seventh term; (9) that a main animal health institute be established as the centre of research, teaching and planning; and (10) that a veterinary code governing animal health and veterinary science be drawn up.—F.A.A.

MUROMTSEV, S. N. (1949.) **[(The three-year plan.) Adoption of scientific achievements in practice.]**—*Veterinariya, Moscow.* **26.** No. 9. pp. 5-7. **1225**

In connexion with the three-year animal husbandry plan a memorandum was issued stating that too long an interval elapses between the completion of a laboratory experiment and its wide application in practice, and that speeding up here is essential. M. discussed the reasons for this time lag and made suggestions as to how to overcome it. He stated that scientists are too theoretical and confined in their outlook, preferring to work within a narrow circle instead of collaborating with dependent sciences and thereby turning their achievements to account. Too much research work is also wasted by neglecting field experiments. Excessive officialdom and lack of initiative are other great hindrances. Very few attempts have so far been made to control infections on a large scale; for instance brucellosis is stated to recur continually, the infection being spread by rats and mice.

M. suggested that scientists ought to pass on any discovery they make to the hundreds of other research stations in the U.S.S.R. and, particularly, to inform practising veterinarians. Lysenko was cited as an example; the secret of his success was that he put theoretical laboratory knowledge into practice by communicating it to practitioners. Other recommendations are: working to a time-table and the finding of new and quicker methods of effectively controlling disease.—F.A.A.

STEIN, C.D., & ROGERS, H. (1950.) **Recovery of viable microörganisms and viruses from vapors removed from frozen suspensions of biologic material during lyophilization.**—*Amer. J. vet. Res.* **11.** 339-344. [Authors' summary copied *verbatim.*] **1226**

Evidence was obtained that viable microorganisms or viruses may be present in the vapor removed from frozen suspensions of biologic material by high vacuum desiccation (lyophilization).

Since such vapors may contaminate the lyophil apparatus with the type of material being processed, it appears advisable to sterilize the equipment immediately following its use. This procedure will obviate the possibility of laboratory contamination and infection of laboratory workers from subsequent handling and operation of the apparatus.

The construction of a lyophil apparatus on a small scale from materials commonly used in laboratory work, for use in processing dangerous material and which can be readily sterilized, is described.

DU PLESSIS, S., & RAATH, R. J. (1948.) **The J.P.H.D. manure treatment midden.**—*Publ. Hlth.* [Johannesburg.] **12.** 271-275. [Abst. in *Bull. Hyg., Lond.* **24.** 221. (1949), copied *verbatim.* Signed: G. GRAHAM DON.] **1227**

The conservation of manure to ensure the utilization of its fertilizing properties has long been a major public health problem in agricultural communities, and the blending of the commercial aspect with the public health aim is fraught with difficulty. Manure is an ideal medium for fly breeding and conservation of manure is inevitably linked with the problem of fly control.

Mr. W. C. E. Lewis, Chief Health Inspector of the Johannesburg City Council Health

Department has designed a midden for the storage and ripening of manure. The manure is placed in a sealed compartment for 18 to 22 days and is then a good earthy product free from smell and unattractive to flies.

The midden is made of brick or concrete and measures 10 ft. long by 5 ft. high by 7 ft. deep. These sizes may, of course, be varied, but should be large enough to take two days' supply of manure. Flues 6 ins. in diameter and 6 ft. high are fitted with cowls to prevent the entrance of storm water. A metal cage of a size to permit of a 5 in. space on all sides to ensure proper ventilation, contains the manure.

In Johannesburg an average of 575 tons of manure is treated monthly and last year this brought a revenue of some £5,900 to the City Council.

REPORTS

GREAT BRITAIN. (1950.) **Annual Report of the National Institute for Research in Dairying, University of Reading, for the year 1949.** pp. 77. Shinfield, Reading: National Institute for Research in Dairying. 1228

There were no reactors to the tuberculin test in the College herd; all calves were vaccinated against CONTAGIOUS ABORTION at about six months of age and the routine testing and treatment against MASTITIS was carried out.

Since 1948 all Shorthorn and Friesian calves have been dehorned; a new method being adopted using a mixture of collodion, salicylic acid and antimony trichloride. After some initial difficulties it is hoped that this method may be 100% efficient in the future.

A detailed report of the experimental work is given under the heading of each department and a list of 58 papers published by members of the staff is included.—D. S. RABAGLIATI.

NORTHERN IRELAND. (1950.) **Agricultural Research Institute of Northern Ireland, Hillsborough, Co. Down. Twenty-third Annual Report, 1949-1950.** pp. 43. Hillsborough, Co. Down: The Institute. Items of veterinary interest pp. 20-26. 1229

Experiments carried out on pig and poultry breeding during the year are recorded. The testing of two further stock boars was begun in the Scheme coordinated by the Animal Breeding & Genetics Research Organisation. The boars in this scheme are mated to groups of their own daughters in order to test them for hidden recessive and hypostatic genes.

The policy adopted in 1947 for the control of LYMPHOMATOSIS IN FOWLS broke down and it was decided to keep the poultry plant free from poultry for a year. Experience in other years demonstrated that many sections of the Institute flock had no great resistance to LYMPHOMATOSIS, but the figures for 1948 may fairly be claimed to show that the flock reached a high level of commercial productivity when environmental conditions happened to be such that serious incidence of disease was avoided.

—D. S. RABAGLIATI.

UNION OF SOUTH AFRICA. (1949.) **Annual Report of the Director of Veterinary Services, 1949.** [DE KOCK, G.]—*Fmg S. Afr.* 24. 521-533. 1230

There was a remarkable increase in the number of doses of vaccines issued, tests conducted and smears examined at the Onderstepoort and the Allerton Laboratories. The percentage increase in the use of some vaccines was as follows: CONTAGIOUS ABORTION vaccine by 57·9%, FOWL POX by 25·2%, LAMSIEKTE by 48·5%, FOWL TYPHOID by 28·3%, BLACKLEG by 12·4% and ANTHRAX by 25·6%. The number of smears examined in 1948-49 fell from 231,779 the previous year to 2,178. The reason for this fall is that the field staff now examine all smears from the various districts and only a small number submitted by farmers themselves are examined at the laboratory.

Tsetse fly is confined to certain parts of Zululand only. During the years 1944-46 TRYPANOSOMIASIS assumed epidemic proportions. The most important control measures were application of D.D.T. and benzene hexachloride in conjunction with bush clearing. The success obtained with these preparations in smoke form is largely attributable to the cooperation of the South African Air Force.

During the year 102 brain specimens were examined for RABIES and 42 were positive. The disease is most prevalent in the Orange Free State and hope is expressed that the extinction of carriers, especially the yellow mongoose, will be continued on a larger scale. In South West Africa there has been a rapid increase, the disease having spread from neighbouring countries. As many as 30 cases in cattle have occurred in one month.—D. S. RABAGLIATI.

CYPRUS. (1949.) **Annual Report of the Chief Veterinary Officer for 1949. Appendix I.**

[Roe, R. J.] pp. 6. [fcp.] [Mimeographed.] 1231

Considerable staffing difficulties were encountered and, therefore, research work during the year was reduced to a minimum.

No case of Anthrax was reported and it is thought that the compulsory vaccination of stock was responsible for this. Some twenty years ago the loss to the Colony from Anthrax amounted to anything from £25–£30,000 a year. No case of Bluetongue occurred in the latter part of the year, the outbreaks that occurred in three areas in January being of a very mild order. Over 18,000 sheep were inoculated against Bluetongue during the autumn with an egg-embryo attenuated vaccine prepared in S. Africa. Parasitic Gastro-Enteritis associated with malnutrition remains one of the most serious diseases.

Newcastle Disease in poultry first made its appearance in 1949 and caused great loss. Quarantine was applied and a vaccine known as Komarov strain made in the State of Israel was used to inoculate some 270,000 birds with success, but the disease now appears to have become established in the Colony.

—D. S. Rabagliati.

Trinidad and Tobago. (1948.) **Administration Report of The Director of Agriculture for the year 1946.** [Muir, J. C.] pp. 28. Trinidad and Tobago: Govt. Printer. 60c. [fcp.] Items of Veterinary Interest pp. 27-28. 1232

Among 450 cattle tested for TB. at Valsayn Farm there were 1·25% reactors. There were 2·27% reactors at the Tobago Farm. In tests of dairy cattle in rural areas around Port-of-Spain there were 5 reactors among approximately 1,200 animals tested. The incidence of Bovine Brucellosis continues to decline. No figures are given.

Only 32 cases of Swine Fever were reported, all in Trinidad. Tobago was free from the disease. Crystal violet vaccine is used and all pigs on the Government Stock farms were vaccinated. The Department also imported vaccine for private owners.

To control Paralytic Rabies, bat destruction squads were maintained by the Health Department to take action in any area where there was any increase in the incidence of bat bites. Vaccine inoculations were carried out in the Mayaro District where cases of Paralytic Rabies occurred in 1945. There were a few suspected cases in County Caroni but no Negri bodies were found in any of the brains.

No suspected case of ordinary Rabies was confirmed. All unclaimed dogs rounded up by the police are destroyed.

There was an outbreak of Laryngo-Tracheitis among the poultry on the Trinidad Stock Farm. All the infected birds were killed and their bodies burnt. Overcrowding was a contributory cause.

Helminth Infestations continue to be a major cause of losses among young livestock.

With an increase in the number of mules imported, the incidence of Strangles and of Influenza has risen. Two cases of Canadian Acne occurred in police horses. "Granular Dermis Sores" occurred in horses imported from Canada for the police. The disease is being investigated in Canada but so far the cause has not been determined. A similar condition occurs in donkeys in the Colony which appears to be transmitted by flies. If abrasion wounds receive treatment and are not exposed, the condition does not occur.—J. A. Griffiths.

Trinidad and Tobago. (1948.) **Administration report of the Director of Agriculture for the year 1947.** [Leach, E. W.] pp. 19. Items of veterinary interest pp. 11-13, 17 & 18. Trinidad and Tobago: Govt. Printer. 60c. 1233

In tuberculin testing of cattle there were 10·2% reactors. There were all slaughtered and partial compensation paid. The incidence of Bovine Brucellosis was lower. Pneumonia and Diarrhoea of Calves was kept under control on the Trinidad Stock Farm. A granular dermatitis gives trouble among equine species.

Equine Strangles and Influenza have not been prevalent. Only one estate reported a few cases. Crystal violet vaccine is used in the control of Swine Fever on all the Government Stock Farms. Helminth Infestation is a cause of heavy losses among peasant owned livestock.

There is a large reduction in the numbers of livestock imported for slaughter. This is explained by the increase in the frozen meat imported and also in the slaughter of local livestock. Legislation controls the slaughter of female stock.

There are two Government Livestock Farms, one in Trinidad and the other in Tobago. A policy of improving horse, cattle, goat and pig breeding is encouraged by the importation of suitable breeding animals.—J. A. Griffiths.

Trinidad and Tobago. (1950.) **Administration Report of the Director of Agriculture for the year 1948.** [Leach, E. W.] pp. 28.

Items of veterinary interest pp. 16-19 and 24-25. Trinidad and Tobago: Govt. Printer. 35c. 1234

There were no outbreaks of ANTHRAX, PARALYTIC RABIES nor SWINE FEVER.

Among 1,228 cattle tested for TB. there were 6% positive reactors. Among buffaloes in the sugar plantations there were 35% reactors. It is stated that in some cases these were slaughtered.

There were four cases of CANINE DISTEMPER at the Dogs' Quarantine Station, said to have resulted from the importation of an infected dog.

CANINE PIROPLASMOSIS occurred in imported dogs in quarantine and five died.

The incidence of BRUCELLOSIS IN CATTLE is negligible. TRICHOMONIASIS was the cause of abortion in one dairy herd.

Benzene hexachloride used in solution as a spray gave satisfactory results against ticks and flies.

The Veterinary Staff consisted of the Deputy Director (Animal Husbandry), four Veterinary Officers and four Stock Inspectors.

—J. A. GRIFFITHS.

FIJI. (1948.) **Department of Agriculture. Annual report for the year 1947.** [HARVEY, C.] pp. 27. Items of veterinary interest pp. 21-23. Council Paper No. 46. Suva: Govt. Printer. 1s. 6d. 1235

No disease occurred as a result of animal importations during the year. In the Tailevu dairying district 8,641 cattle were tuberculin tested and nearly 3·8% reacted. In the Suva milk supply area 573 cattle gave 2·4% positive reactors. In Eastern districts 7,560 cattle gave 3·9% positive reactors. 254 cattle in Western districts gave 3·2% positive and 254 in Northern districts 4·7% positive reactors. Three outbreaks of BRUCELLOSIS occurred on Viti Levu. Strain 19 vaccine obtained from Australia was used in controlling the outbreaks. All young stock were vaccinated.

RINGWORM, which has been a major problem among equine animals, is coming under control, apparently as a result of an acquired resistance by the local animals. Large numbers of animals were treated. The disease is less prevalent in the dry season; among cattle it has been less severe.

PARASITIC GASTRO-ENTERITIS OF CALVES was controlled by the use of phenothiazine.

The meat inspection service is being gradually taken over from the medical department. A senior meat inspector, a meat inspector and six assistant meat inspectors have been appointed and this has made it possible to inspect the carcasses before the meat is exposed for sale. The standard of hygiene has improved at most of the slaughter houses. The total condemnations were 141 cattle and 34 pigs. Tuberculous carcasses condemned were 126 cattle and 27 pigs. STEPHANURIASIS accounted for the condemnation of 5 pork carcasses and 1.026 organs (mainly infected kidneys).

—J. A. GRIFFITHS.

FIJI. (1949.) **Department of Agriculture. Annual Report for the year 1948.** pp. 39. [Contains Report Senior Veterinary Officer pp. 20-33, HALL, H. T. B.] Council Paper No. 24. Suva: Govt. Printer. 4s. 1236

The Department purchased and shipped animals for farmers from Viti Levu to the British Solomon Islands Protectorate and to Tonga.

Tuberculin tests of 7,960 cattle gave an average of 3·1% positive. In the Suva area of milk supply 2·9% of 482 cattle were reactors. The lowest reactor percentage (1·6%) was in 394 cattle in the Western Districts and the highest 6·5% in 108 cattle in the Northern Districts. In the Eastern Districts 6,475 cattle gave 2·5% positive. Lack of staff is hindering eradication. Against BOVINE BRUCELLOSIS, strain 19 vaccine is being used as a routine twice a year in all herds. RINGWORM IN HORSES, which became severe some years ago, is gradually becoming less severe. There is a seasonal fluctuation, with an increase in the last and first quarters of the year and a decrease in the second and third quarters.

STEPHANURIASIS OF PIGS was adequately controlled by the use of well drained sties.

Small animal clinics are maintained with a veterinary assistant for routine diagnosis and treatment under the supervision of a veterinary officer. The main conditions treated are parasites external and internal, including heartworm, and CANINE DISTEMPER, FELINE ENTERITIS and wounds.

Regular visits are made to all the 45 dairies supplying whole milk for human consumption and also to 37 butter fat dairies and 34 ghee producing dairies.—J. A. GRIFFITHS.

NIGERIA. (1948.) **Annual Report of the Veterinary Department for the year 1947.** [SIMMONS, R. J.] pp. 32. Lagos: Govt. Prnter. [9d.] 1237

Sporadic cases of ANTHRAX were reported. 435,530 animals were immunized.

CONTAGIOUS ABORTION is still prevalent on many of the Government farms. All calves on

these farms are inoculated with strain 19 vaccine.

Small outbreaks of HAEMORRHAGIC SEPTICAEMIA occurred in Bauchi, Adamawa and the Cameroons Provinces. Control was by use of vaccine. 5,088 cattle were inoculated.

653,792 cattle were immunized against BLACKLEG. A number of small outbreaks occurred.

BOVINE CONTAGIOUS PLEURO-PNEUMONIA is still prevalent mainly among the herds of the nomadic Fulani in the northern grazing areas. The inoculation of culture vaccine is not very satisfactory with these herds. There were 127 fresh outbreaks involving 12,531 cattle; 103,711 animals were vaccinated.

CAPRINE CONTAGIOUS PLEURO-PNEUMONIA appears to be endemic in some remote northern areas where there is a large and concentrated goat population. In Bornu an outbreak among 2,000 goats caused about 20% mortality.

FOWL POX, FOWL TYPHOID, FOWL CHOLERA and SPIROCHAETOSIS are endemic among the indigenous poultry stock and imported stock readily become infected. Vaccination has proved successful and SPIROCHAETOSIS is controlled by the use of one injection of 1 ml. of a 10% solution of acetylarsan.

Losses from TRYPANOSOMIASIS are heavy. About 30,000 tartar emetic treatments were given. The results of treatment with phenanthridinium has proved of little value in Nigeria, relapses after treatment being common and severe and PHOTOSENSITIZATION is a common sequel.

In a small outbreak in Bornu Province the losses from OVINE PIROPLASMOSIS amounted to nearly 41%.

A small outbreak of HEARTWATER occurred in Bauchi Pronvince. Quarantine and careful attention to tick control prevented the spread of infection.

Sporadic outbreaks of F. & M. DISEASE occurred among trade cattle. The herds were quarantined and the disease spread by mouth swabbing with infected material.

RABIES continues to cause anxiety in the main townships in the Northern Provinces and throughout Nigeria.

Immunization against RINDERPEST is by the use of attenuated goat virus in camps, where animals are also immunized against BLACKLEG, ANTHRAX, HAEMORRHAGIC SEPTICAEMIA, etc., and cases of TRYPANOSOMIASIS are treated with tartar emetic. The young and unthrifty stock are treated for HELMINTHIASIS with phenothiazine, and castration of unsuitable bulls is encouraged. The difficulties of controlling RINDERPEST are great because of the nature of the terrain, the nomadic habits of the cattle owners, and the immense areas over which the herds are distributed. Many nomadic owners avoid immunization owing to the fear of losses. The disease still occurs in all the provinces where cattle of nomadic tribes are grazed.

The Vom Stock Farm continues to provide facilities for the training of students and for experimental studies in the breeding and feeding of livestock.

Marshall, R. S., reported on the Veterinary Laboratory and Veterinary School. Original research was not possible as the Pathologist was on leave and the posts of Senior Research Officer and a Research Officer remained vacant.

RINDERPEST attenuated goat virus to inoculate 516,250 animals was prepared at the laboratory. 576 goate were used for this purpose. At the beginning of 1947 the virus had been passaged 590 times through goats. In December owing to an unsatisfactory reaction in goats, it was found necessary to revert to an earlier generation, a suitable virus for goats being found by returning 13 generations. The Cryochem desiccating apparatus worked satisfactorily. Anti-rinderpest serum production was discontinued in 1944 but owing to outbreaks of RINDERPEST among the highly susceptible indigenous cattle of Ilorin and Oyo it was necessary to make serum for these cattle. One batch of dried attenuated goat virus which had been stored for 876 days at 5°C. produced mild reactions in three of five animals inoculated. A second batch after storage for 823 days gave definite temperature reactions in four of five animals inoculated.

Dimidium bromide gave Nigerian cattle no resistance to inoculation of *T. congolense* infection. Treatment of cattle infected with *T. congolense* gave an 85% recovery rate. There was no photosensitization in the animals treated. Attempts to produce photosensitization show that this is most readily produced after giving dimidium bromide parenterally. It is not confined to trypanosome infected animals as it occurred in two healthy animals seven weeks after inoculation with the drug. The lesions were slight (a few places the size of a florin) and healed rapidly.

BRUCELLOSIS IN PIGS has caused abortions. Sera of 278 pigs were tested and 17·2% were positive, 67·4% negative and the rest doubtful.

—J. A. GRIFFITHS.

NIGERIA. (1948.) **Annual Report of the Veterinary Department for the year 1948.**

[Beaton, W. G.] pp. 25. [Typescript copy.] 1238

The major part of the duties of the provincial veterinary officers was in connexion with the control of the epizootic diseases of cattle, of which Rinderpest, Bovine Contagious Pleuro-Pneumonia and Blackleg predominated. Control was largely by means of mass prophylactic vaccination and police measures and combined with vaccination in the case of outbreaks. Legislation had been enacted for compulsory immunization against Rinderpest and Bovine Contagious Pleuro-Pneumonia, but so far it had not been put into operation.

Trypanosomiasis takes the heaviest toll but "antrycide" has been successfully used and is still undergoing trials.

Helminthiasis has been given considerable attention. Poultry diseases have decimated the flocks of the rural population, although it is hoped to deal more fully with them in the future if a veterinary officer can be recruited.

The section dealing with the Laboratory Service describes a large number of disease conditions and the means taken to deal with them.

At the Veterinary School at Vom there were 40 students, four in the Assistant Veterinary Officers' course, 22 in the Veterinary Assistants, Senior course, and 14 in the Veterinary Assistants, junior course. Great difficulty has been experienced in finding candidates for the School with a sufficiently high educational standard as most of those eligible prefer other professions. There is no outlet for graduates other than Government posts and while the salaries and positions offered to veterinary assistants equal those of their medical brothers, there is no chance of private practice for the veterinarians, whereas the Government medical officers find a lucrative private practice in addition to the government duties.—D. S. Rabagliati.

Bechuanaland Protectorate. (1950.) **Annual Report of the Veterinary Department for the year 1949.** [Dawe, E. C. S.] pp. 17. [fcp.] [Mimeographed.] 1239

The effects of F. & M. Disease on export were much less than in recent years. Approximately 7% of the total cattle were exported for slaughter, the highest figure yet recorded, the usual number being about 5%.

Considerably more Anthrax, Contagious Abortion, Lamsiekte, Fowl Typhoid and Gallsickness vaccines were issued than in the previous year, but some 20,000 less Blackleg vaccine doses.

The Department was not able to deal satisfactorily with the control of disease except such diseases as were directly connected with the export trade, F. & M. Disease, Anthrax and Sheep Scab. Animal health was at a generally low level especially towards the end of the year. The diseases occurring were Heartwater, Redwater, Gall-sickness, Rabies, Calf Paratyphoid, Contagious Abortion, Blackleg, African Horse Sickness, Trypanosomiasis and others. One hundred and forty cattle were tested by the intradermal tuberculin test and here were no reactors.

All livestock for export were inspected and certified fit to travel by a member of the veterinary staff immediately before loading. Preoccupation with export duties did not allow of any efforts being made to improve animal husbandry and for the same reason the veterinary education of the African staff had to be postponed.—D. S. Rabagliati.

BOOK REVIEWS

Miles, A. A., & Pirie, N. W. [Edited by.] (1949.) **The nature of the bacterial surface. A symposium of the Society for General Microbiology. April, 1949.** pp. vii + 179. Oxford: Blackwell Scientific Publications. 15s. 1240

Spooner, E. T. C., described the conditions, methods and problems of locating surface antigens, giving an acocunt of the surface of the bacterial cell. An example of antigenic analysis was given by Morgan, W. T. J., on the surface structure of *Shigella shigae;* he dealt in particular with the O-antigen.

There were two controversies on fundamental aspects of bacteriology. One was on the nature and composition of the type-transforming principle in pneumococci, the other on the cause of bacterial motility. In the first, Stacey, M., suggested that the desoxyribonucleic acid, now assumed to enter into the structure of rough pneumococci like a gene and to cause the production of type-specific polysaccharide, has a monomolecular layer of the polysaccharide attached to it and that it is this polysaccharide which determines the specificity of the desoxyribonucleate. He considered that the ribonucleates of the cell wall are non-specific, that the magnesium ribonucleate of a Gram-positive cell can be removed, thus depriving the cell of its faculty to retain the Gram stain, and that the cell can be re-plated back to Gram-positiveness with magnesium-ribonucleate

from any other source. Against this, Taylor, H., maintained that it is the desoxyribonucleic acid alone which causes the production of the type specific polysaccharide, and that it is not even certain whether the transforming principle is situated in the surface or in the nuclear body some distance from the surface antigen. How the capsule, the capsular antigen and the transforming principle are related is not clear. Non-specific accessory factors are required to allow the transforming principle to be fixed to the organisms; the mechanism of their action is unknown. The multiple specificities of the transforming principle go in number beyond the specificities of the developed capsular material, as the transformation can be achieved in more than one step, and as, in an analogous way, an extremely rough (ER) strain may be transformed into an ordinary rough (R) strain.

Regarding bacterial motility, Pijper, A., considered that the movement of bacteria was due to spiral waves of contraction, and not to the action of flagella. Organisms, the flagella of which have been removed by shaking remain fully motile. He maintained that all preparations of motile organisms should be interpreted in the light of what one can see in dark-ground pictures of the living organisms, and further, that the only reliable light source for such pictures is the sun, supporting his argument with a film. Against this were some very impressive micrographs by the Dutch workers and the preparations under the phase contrast microscope by Fleming, A., in which the flagella could be seen at work.

—A. MAYR-HARTING.

SINGER, C. (1950.) **A history of biology. A general introduction to the study of living things.** pp. xxxv+579. New York: Henry Schuman. Revised Edit. £1 15s. 1241

Veterinary science is essentially one of the branches of applied biology and veterinarians whether they be teachers, practitioners, research workers or public health officials will find much of interest in this new edition of a book first published in 1931. The history of the development of knowledge of biological problems is followed from Hippocrates down to the present day. The book is in some respects a companion volume to the author's "Short history of medicine" and is written in a style which avoids as far as possible the use of technical terms so that the reader with only a minimum of scientific training may comprehend it.—M.C.

BELSCHNER, H. G. [D.V.Sc., H.D.A., Deputy Chief, Division of Animal Industry, Dept. of Agriculture, New South Wales.] (1950.) **Sheep management and diseases.** pp. x+718. Sydney & London: Angus & Robertson. 75s. 1242

According to the introduction, this book has been written for: "students at agricultural and technical colleges, for university students studying veterinary science and agriculture and for prospective sheep farmers and beginners"; it is also: "hoped that the information contained therein, especially on the diseases of sheep, will be found useful to more experienced graziers". Careful reading, however, shows that the author's claim is far too modest, and the book is worthy of a place in the library of the most experienced flockmaster or veterinarian.

It is difficult to imagine that any one man could have so efficiently assembled such a mass of detailed information single handed and, in fact, seventeen people are acknowledged as having checked typescripts and made suggestions. Nevertheless, the author is to be congratulated on having produced a book which will probably run to many editions, and which will certainly fill a long felt want among those who are interested in sheep.

The history of the introduction of sheep to Australia is followed by brief descriptions of present day breeds and an account of the genetical composition of some of the newer breeds, together with excellent photographs and advice on breeding for mutton and wool. Sheep husbandry is covered under the main headings: Sheep classing, Dipping, Blowfly strike, Breeding, Keeping of records, Buildings, Feeding, and Preparation of the wool clip for sale.

Other chapters cover anatomy and physiology of sheep, P.M. examinations, collection of specimens for laboratory examination, and the correct method of administering medicines. Diseases are dealt with under the headings: Infectious, Non-infectious, Parasitic, and Wool and Skin. There is a fairly comprehensive chapter on poisoning in sheep, and a chapter on the treatment of wounds and fractures.

Appendices give information on common drugs, on the gestation period, puberty, oestrus, temperature, pulse and respiratory rate of various domestic animals; weights and measures, and a glossary of sheep and wool terms are also included.

Extensive search failed to reveal any mistakes in the index, which is comprehensive. Printing, binding, and general layout are excellent, but some of the photographs lack clarity and it is to be hoped that they will be improved in future editions.—G. B. S. HEATH.

ANON. (1949.) **The British Pharmaceutical Codex.** pp. xxv+1562. London: The Pharmaceutical Press. £3. 3s. **1243**

This 1949 Edition of an essential standard reference work continues to provide still more standards for drugs and preparations not included in the British Pharmacopœia. It is a complementary volume to the B.P. and in this edition, the requirements for each drug, or preparation, are delineated under the heading "standard". Some 130 new general monographs; 15 on antisera, vaccines, etc.; nine on human blood preparations and seven on surgical dressings have been added. There are some 60 changes in names and 33 preparations have been omitted.

The volume is divided into seven parts: I General monographs, II antisera, vaccines, etc., III human blood preparations, IV surgical ligatures and sutures, V surgical dressings, VI formulary and VII 12 appendixes. The volume is well bound, print excellent, free from error and, as befits an outstanding work of reference, is in all respects in the best tradition of the pharmaceutical press.

—MALCOLM WOODBINE.

HAWKING, F. [M.D. The National Institute for Medical Research, Mill Hill, London.] & LAWRENCE, J. S. [M.D., M.R.C.P. Physician-in-charge of the Walkden Clinic, Manchester.] (1950.) **The sulphonamides.** pp. vii+389. London: H. K. Lewis & Co. Ltd. 42s. **1244**

Although this book deals primarily with clinical aspects, the chemistry, estimation, mode of action, development of resistance and pharmacology of the sulphonamides are also adequately reviewed.

Separate chapters deal specifically with mode of administration, choice of compound, streptococcal and staphylococcal, pneumococcal, meningococcal (and meningitis), urinary, and intestinal infections; the treatment of burns and wounds; gas gangrene; peritonitis; dermatology, and diseases of ear, nose, throat and eye.

There are an extensive bibliography of over 1,300 references and well documented, or illustrated, notes on the diseases, infections, schedules of treatment and toxicity. Useful pictorial diagrams are included of toxic symptoms and their frequency for ten of the commonest compounds. Misprints are few, although the fastidious chemist might cavil at some of the structural formulae. The volume is well printed, set out in clear type on good paper and is reasonably priced for a specialized work.

—MALCOLM WOODBINE.

SEXTON, W. A. [B.Sc., Ph.D., F.R.I.C.] (1949.) **Chemical constitution and biological activity.** pp. xxi+412. London: E. & F. N. Spon Ltd. 55s. **1245**

More fundamental approaches to the wide subject of chemotherapy are becoming possible as a result of the extension in our knowledge of the chemistry of biological maerial. The author has amassed a wealth of information on the biological activity of chemical compounds and discussed in great detail the relation between their constitution and activity.

The volume is divided into two parts. The five chapters of part one contain synopses of the fundamentals and survey proteins, enzymes, macromolecules and the physical chemistry of bacterial growth. The sixteen chapters of part two are on selected topics. These include the detailed action of compounds used in chemotherapy (sulphonamides, penicillin, paludrine, antrycide), insecticides and plant-growth regulators.

A fascinating story of a vast amount of work, the book is written primarily for chemists and Professor A. R. Todd commends it "as a stimulus to further research" in the problems of chemistry as applied to biology. The tables, summaries and extensive chapter references will further this object. The correlation of structure and activity is still limited and more biological and chemical investigations are needed.

This book, an important addition to the literature, is remarkably free from errors and misprints, attractively produced and handsomely bound, well worth what may seem the somewhat high price.—MALCOLM WOODBINE.

HAYES, M. H. [F.R.C.V.S. Late Captain "The Buffs".] [Revised by TUTT, J. F. D.] (1950.) **Veterinary notes for horse owners. A manual of horse medicine and surgery.** pp. 655. London, New York, Melbourne, Sydney, Cape Town: Hurst & Blackett Ltd. 14th Edit. 50s. **1246**

This book has served several generations of horsemen and the appearance of a 14th edition is a sufficient tribute to its value. Revision has been done by Tutt, J. F. D., and takes the form of numerous addenda to the original text. The book attempts to cover all diseases of horses in all parts of the world and in dealing with what might be called the more exotic diseases the "Handbook of Contagious and Infectious Diseases" of the Royal Army Veterinary Corps has been freely drawn upon.

The strongest parts are those dealing with the non-infectious diseases, lamenesses, wounds,

etc. The accounts of the infectious diseases are somewhat uneven and some of them require considerable amendment in future editions. One which may be cited is that on pp. 222 and 223 dealing with osteoporosis. This ignores all the work done in Ceylon, the Philippines, Japan and S. Africa since 1927 on the causation of this disease, and also Theiler's work on its pathology. It is now generally accepted that the cause is dietetic and that the disease may be prevented by avoiding excess of foods, such as bran, which have a high phosphorus/calcium ratio. Yet the edition under review still contains such statements as "this shows that it is not a disease for which diet is responsible" and, dealing with treatment, "Bran is recommended because . . . . . it contains a large amount of bone-forming material". Some parts of the original have now become so archaic that they should be omitted, for example two pages (497–498) are devoted to a description of bleeding by means of the fleam.

This is not a book for the veterinarian: it has been written for the horse owner. Future editions would be improved by considerable pruning and revision of the original text and indeed of some of the more recent addenda.

—M.C.

BOOKS RECEIVED

[Notice of recently received books does not preclude review.]

BERNARD, C. (Trans. by Greene, H. C.) (1949.) **An introduction to the study of experimental medicine.** pp. xix+226. New York: Henry Schuman, Inc. $.300.

CAMERON, G. (1950.) **Tissue culture technique.** pp. xii+191. New York: Academic Press Inc. 2nd Edit. revised & enlarged. $4.20.

DUBOS, R. J. (1951.) **Louis Pasteur. Free lance of science.** pp. 418. London: Victor Gollancz, Ltd. 18s.

FLOSDORF, E. W. (1949.) **Freeze-drying. (Drying by sublimation).** pp. vii+280. New York: Reinhold Publishing Corporation. $6.00.

FULTON, J. F. (1949.) **Physiology of the nervous system.** pp. x+667. New York & London: Oxford University Press. 3rd revised Edit. 75s.

HARVEY, W. C. & HILL, H. (1951.) **Milk: production and control.** pp. viii+758. London: H. K. Lewis & Co. Ltd. 3rd Edit. 57s. 6d.

HENDRICKX, J. H. V. (1949.) Practische Veeverloskunde en nota's over Veterinaire Gynecologie **[Veterinary obstetrics.]** pp. 199. Antwerp, Brussels, Ghent, Leuven & Amsterdam: Uitgeversmij. N. V. Standaard-Boekhandel. F. 9.90.

KRÜGER, G. (1950.) Der anatomische Wortschatz unter teilweiser Mitberücksichtigung der Histologie und der Embryologie für die Studierenden der Veterinärmedizin. **[Dictionary of anatomical terms.]** pp. 95. Leipzig: S. Hirzel. DM. 5.

LANDER, P. E. (1949.) **The feeding of farm animals in India.** pp. xii+492. London, Calcutta, Bombay & Madras: Macmillan & Co. Ltd. 25s.

LISSOT, G. (1950.) Le pigeon. **[The pigeon.]** pp. 221. Paris: Flammarion. Fr. 300.

LWOFF, A. (1950.) **Problems of morphogenesis in ciliates. The kinetosomes in development, reproduction and evolution.** pp. ix+103. New York: John Wiley & Sons, Inc. $2.50. London: Chapman & Hall, Ltd. 20s.

MENSA, A. (Trans. into Spanish by Farreras, P.) (1949.) Patologia quirúrgica veterinaria. Tomo I. Cirugía general y sistemática. **[Veterinary surgical pathology. Vol. I. General and systematic surgery.]** pp. xix+651. Barcelona, Madrid, Buenos Aires, Rio de Janeiro: Editorial Labor, S.A. 200 pesetas.

MENSA, A. (Trans. into Spanish by Farreras, P.) (1950.) Patologia quirúrgica veterinaria. Tomo II. Cirugía especial y regional. **[Veterinary surgical pathology. Vol. II. Special and regional surgery.]** pp. xxvii+1135. Barcelona, Madrid, Buenos Aires, Rio de Janeiro: Editorial Labor, S.A.

WILLIAMS, R. J., EAKIN, R. E., BEERSTECHER, E., JR. & SHIVE, W. (1950.) **The biochemistry of B vitamins.** pp. x+741. New York: Reinhold Publishing Corporation. $12.00.

Printed in Great Britain by C. Burrell & Son, Chertsey, Surrey